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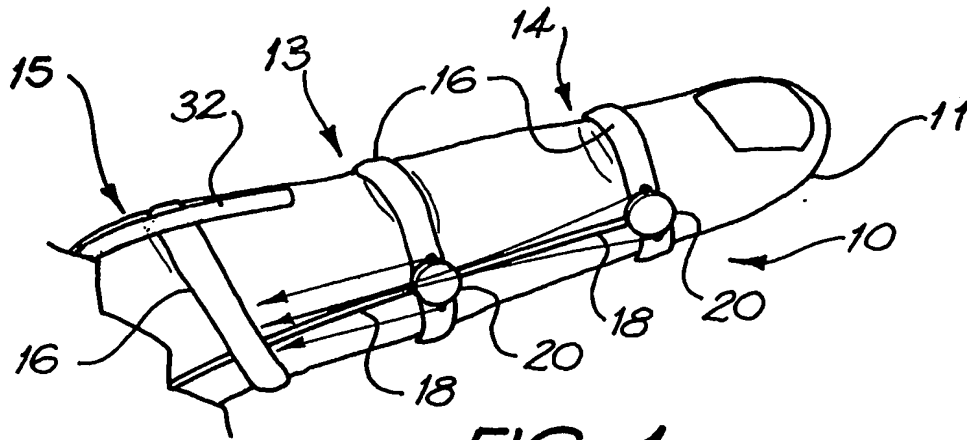


FIG. 1

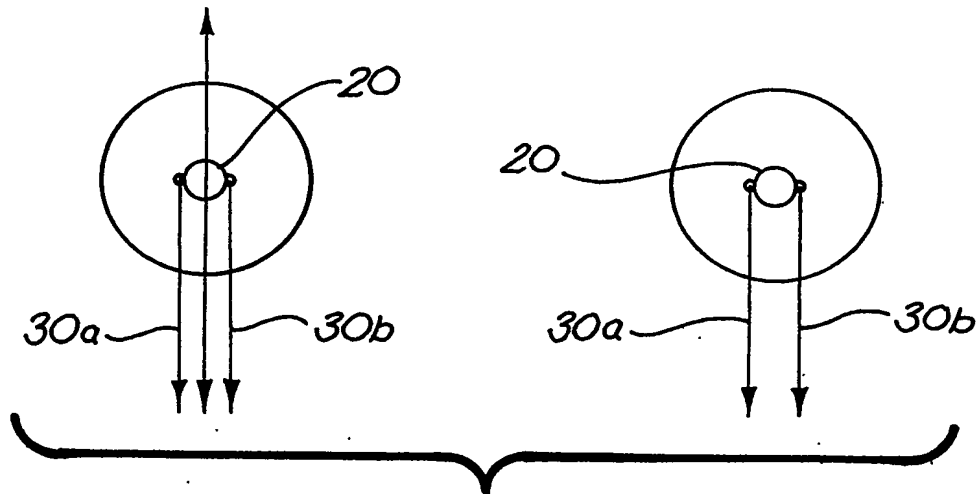


FIG. 2

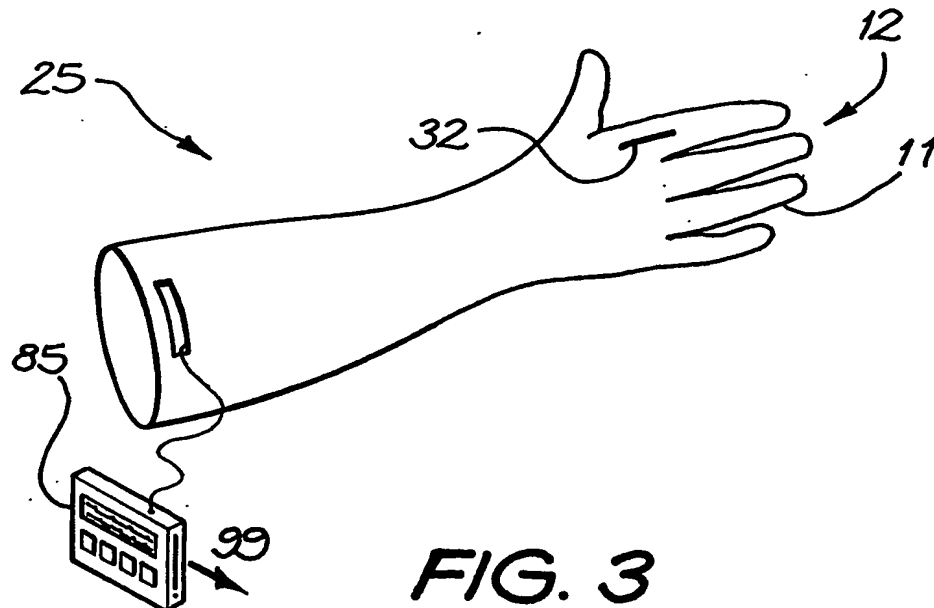


FIG. 3

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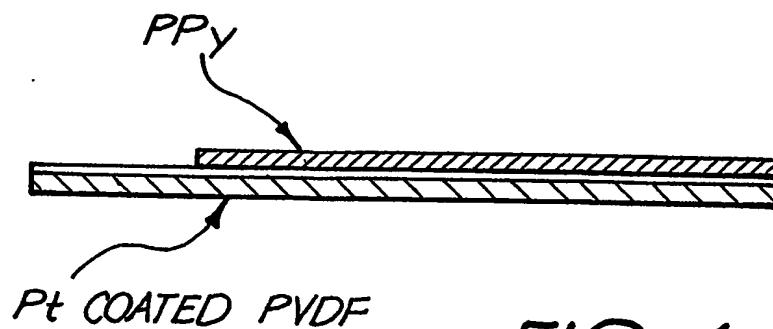


FIG. 4

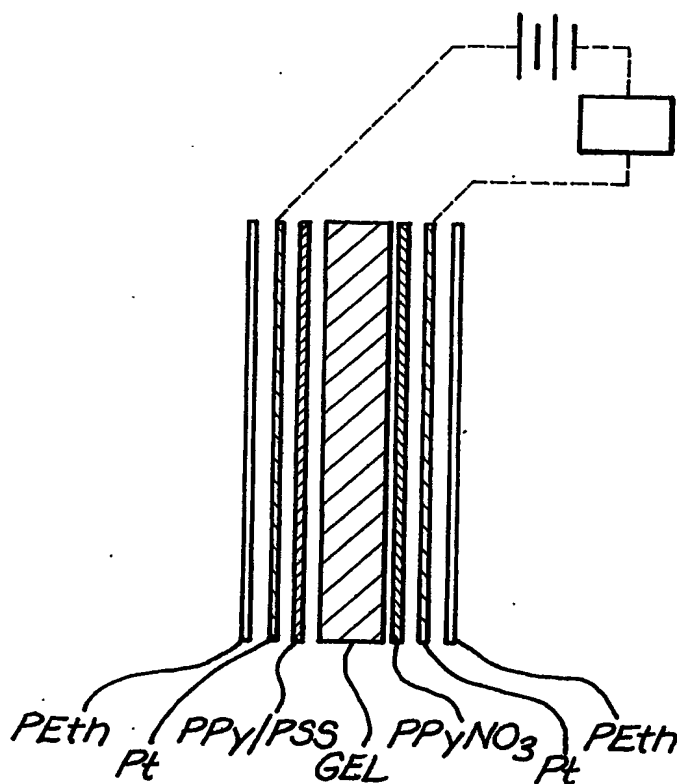


FIG. 5

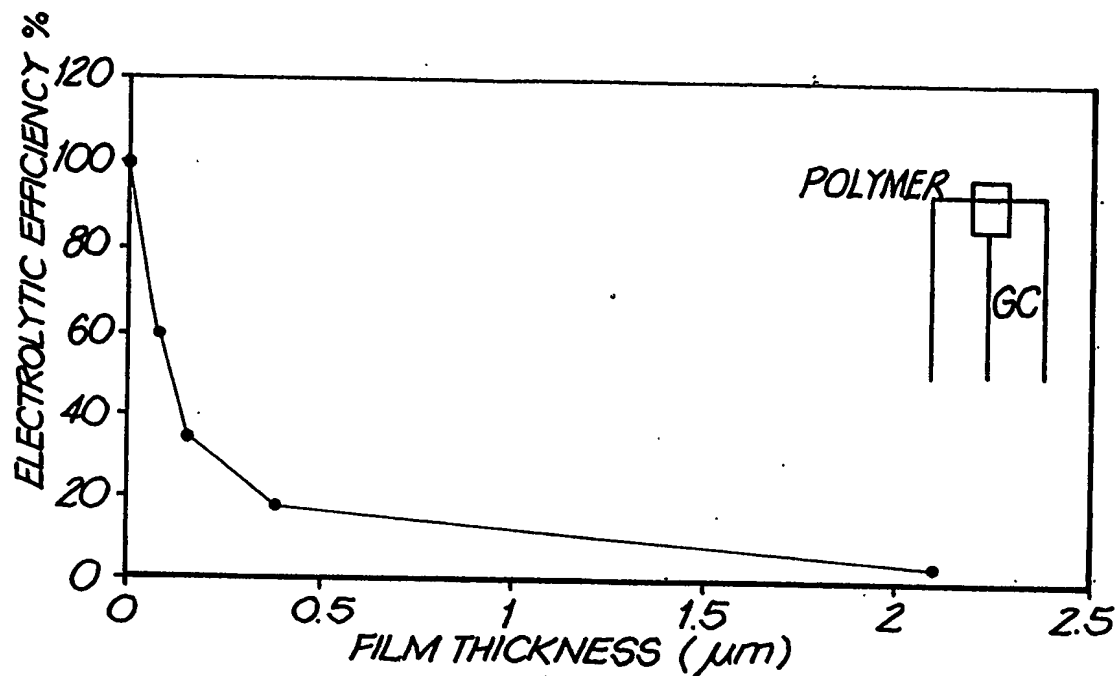


FIG. 6

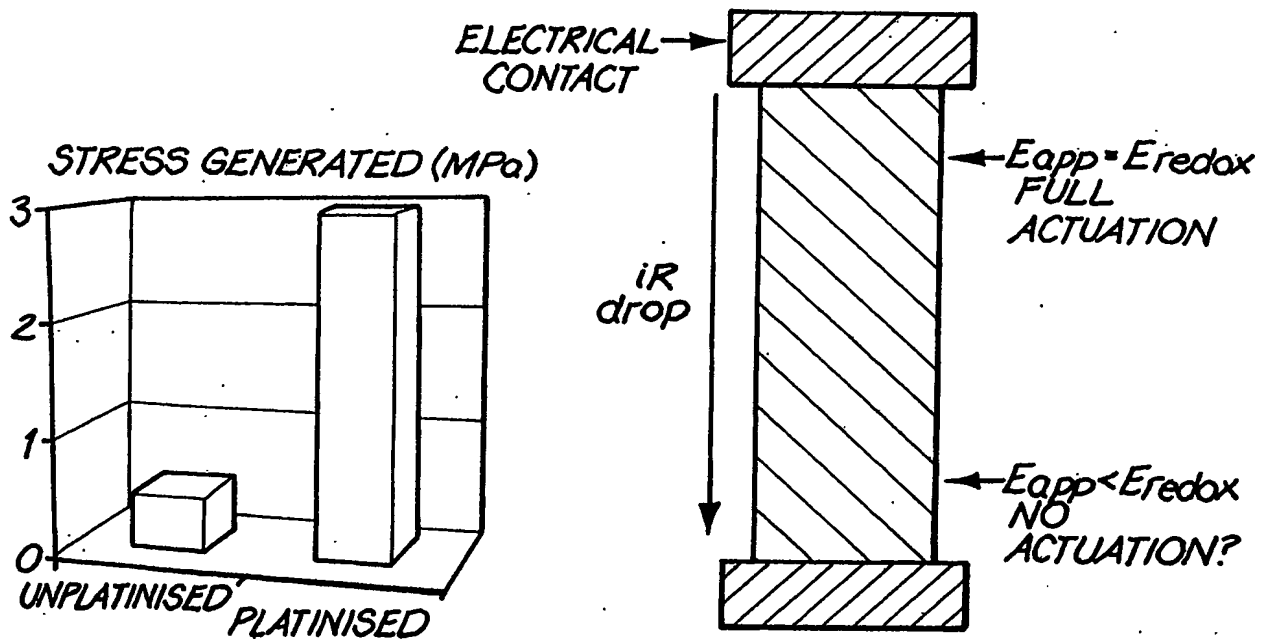


FIG. 7a

FIG. 7b

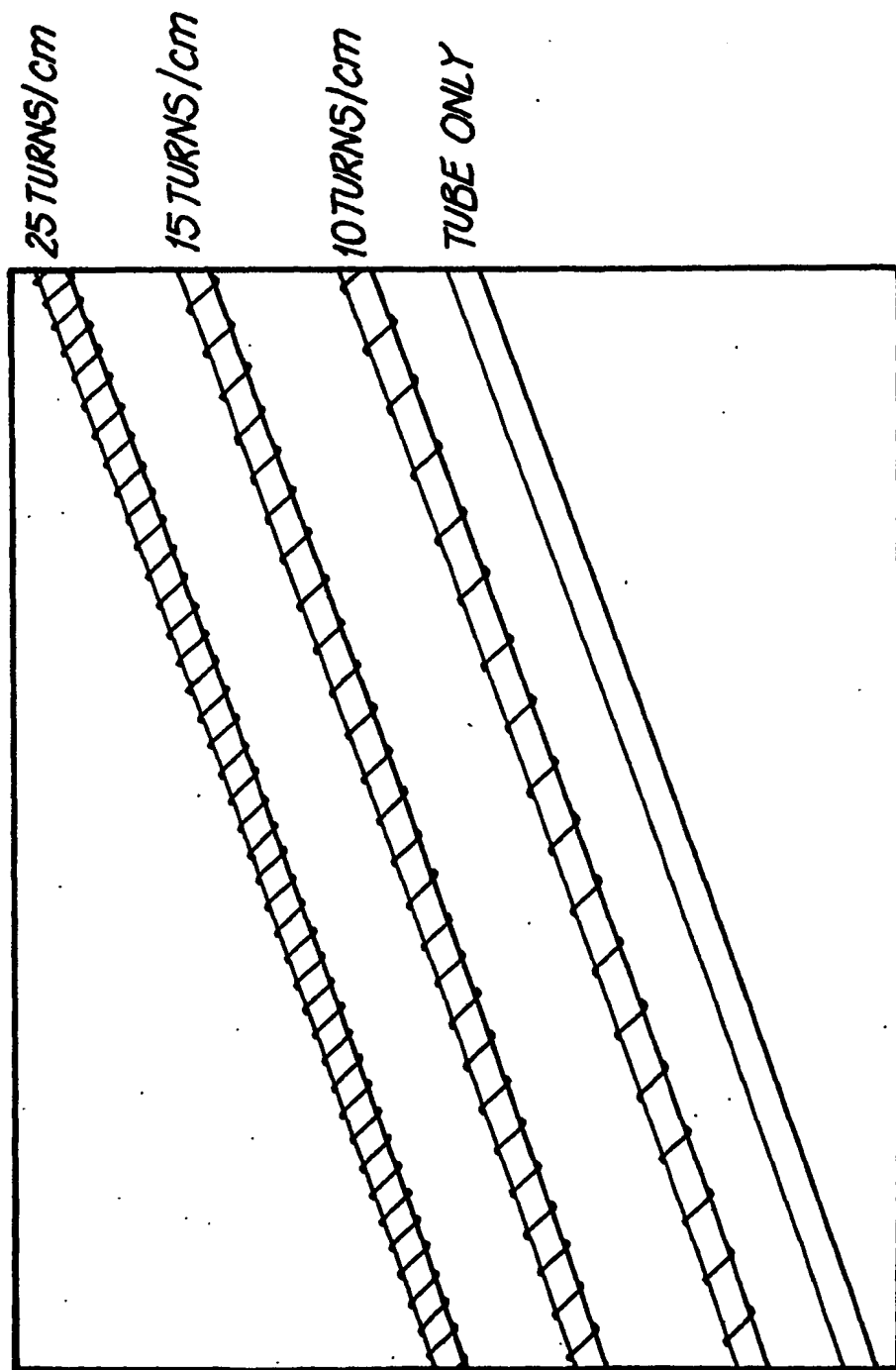


FIG. 8

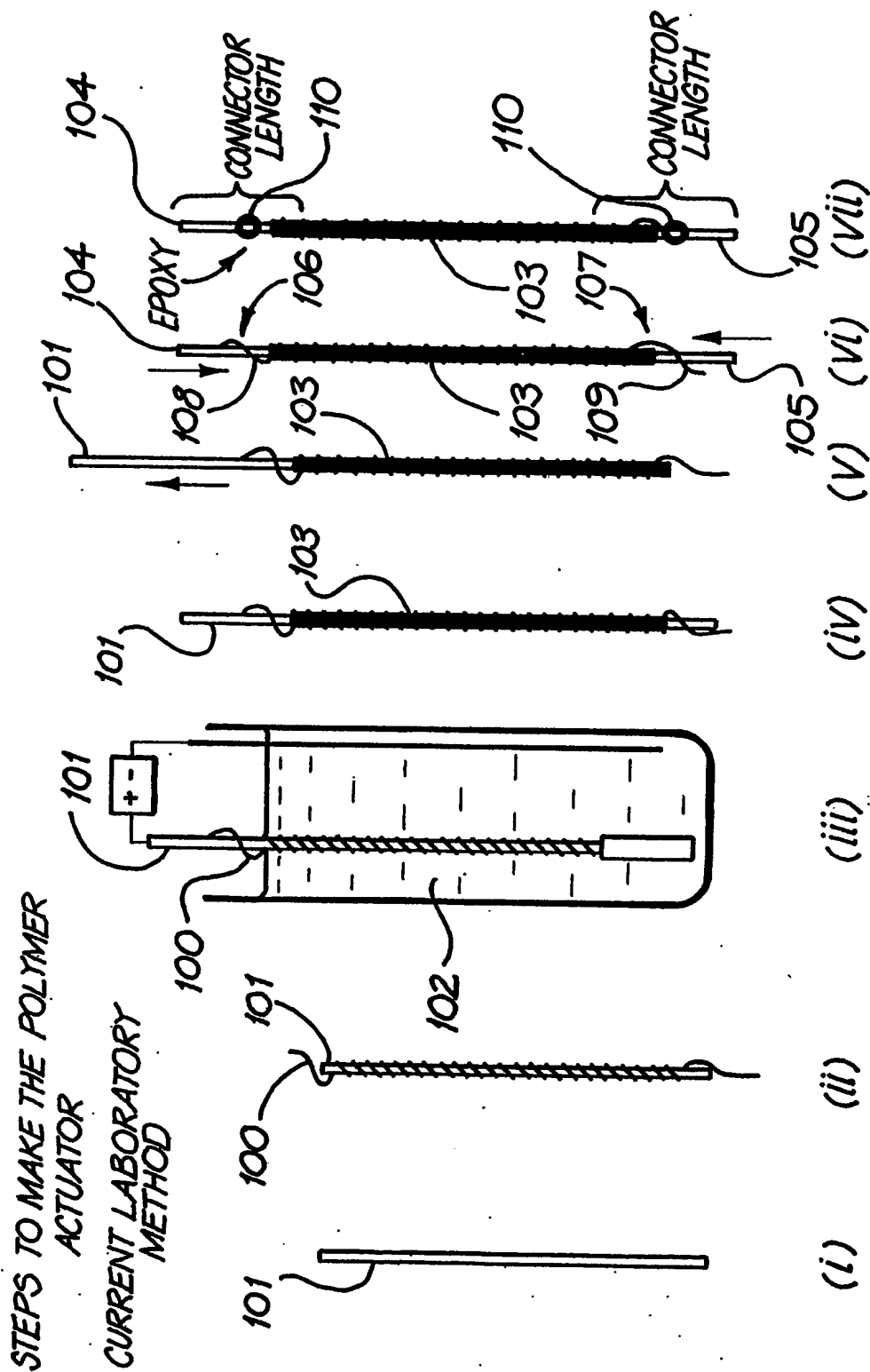
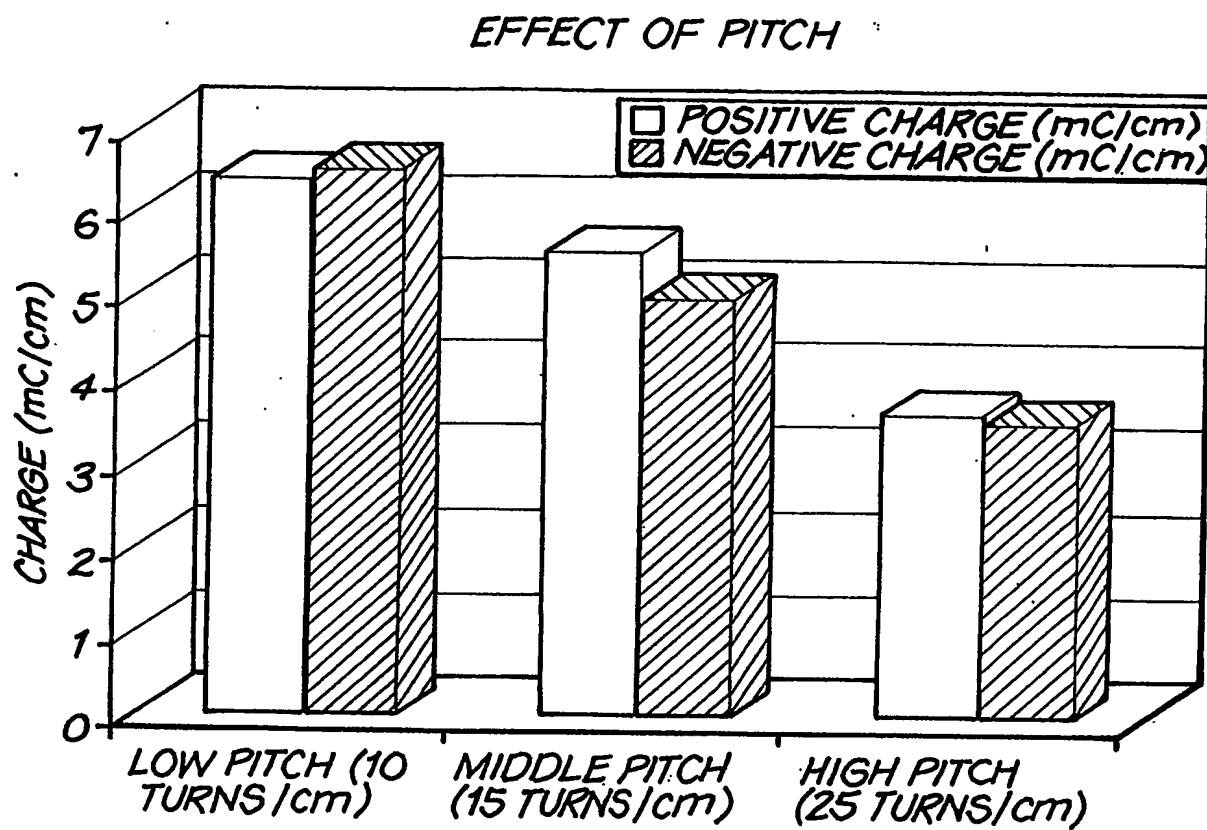


FIG. 9

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*FIG. 10*

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BASIC CIRCUIT DIAGRAM

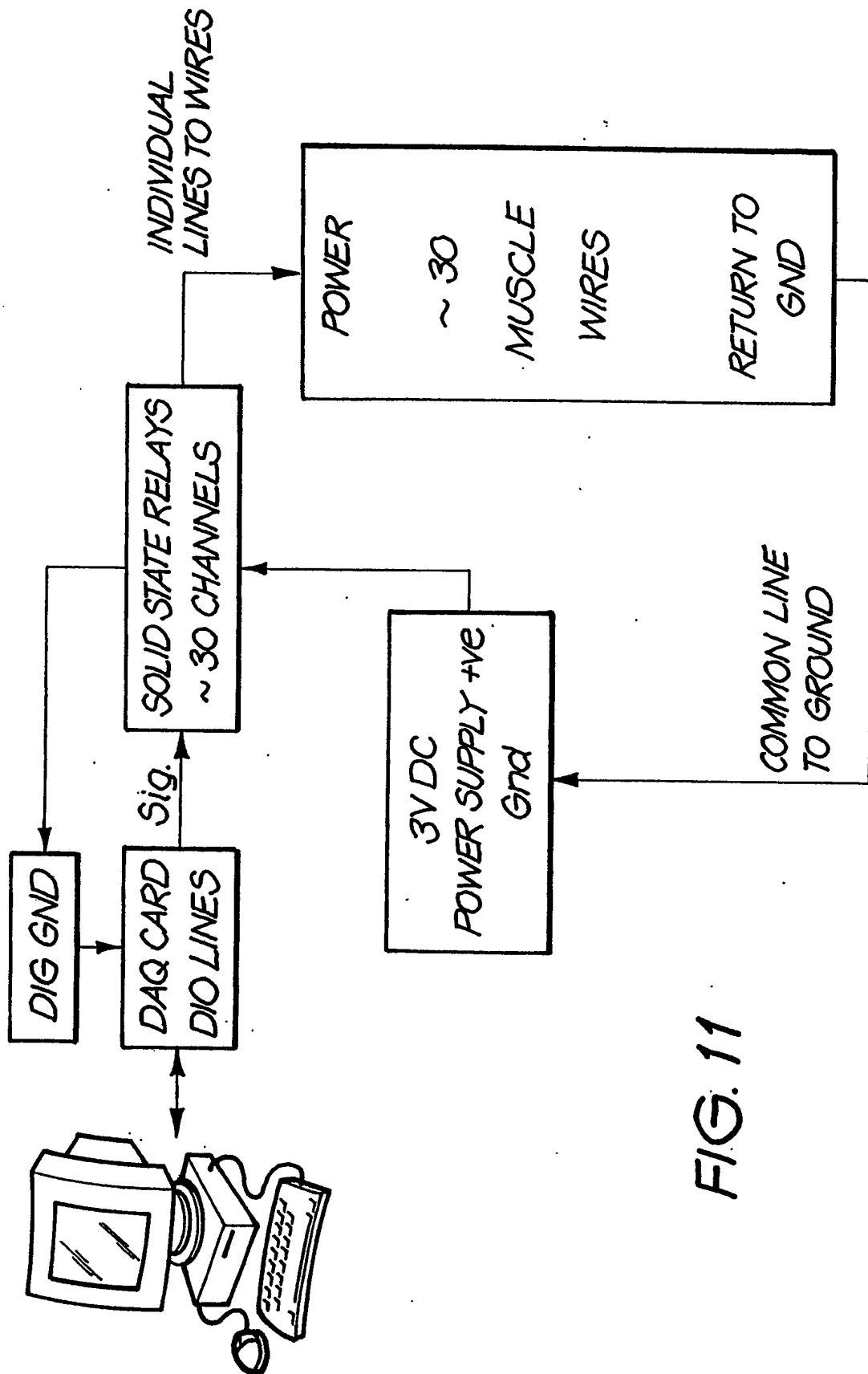


FIG. 11

PCI-MIO-16XE-50 IS DEVICE S  
ON THE POWERMAC 9500  
REMEMBER TO CHANGE THIS IF USING  
THE PCI-DIO-96 OR ANOTHER COMPUTER

DIGITAL OUTPUT

device

digital channel

PCI-MIO-16XE-50 HAS ONE  
DIO PORT OF 8 LINES. THIS PORT  
IS REFERRED TO AS PORT 0.

HIT WHITE ARROW TO START &  
EXIT AT ANY TIME TO FINISH

LINE PATTERNS FOR  
EACH POSSIBLE STATE

NONE

FLEX J1

EXT J1

NONE/FLEX/EXT

PROGRAM STATUS


OFF

CURRENT FINGER POSITION

Flexion

WHICH WAY TO MOVE?

FLEXION CHO



PULSE WIDTH MODULATION

☐ OFF / ON

ON TIME / PER SEC / DUTY CYCLE

TIME TO HOLD (SECS)

CYCLES PER SECOND

% ON

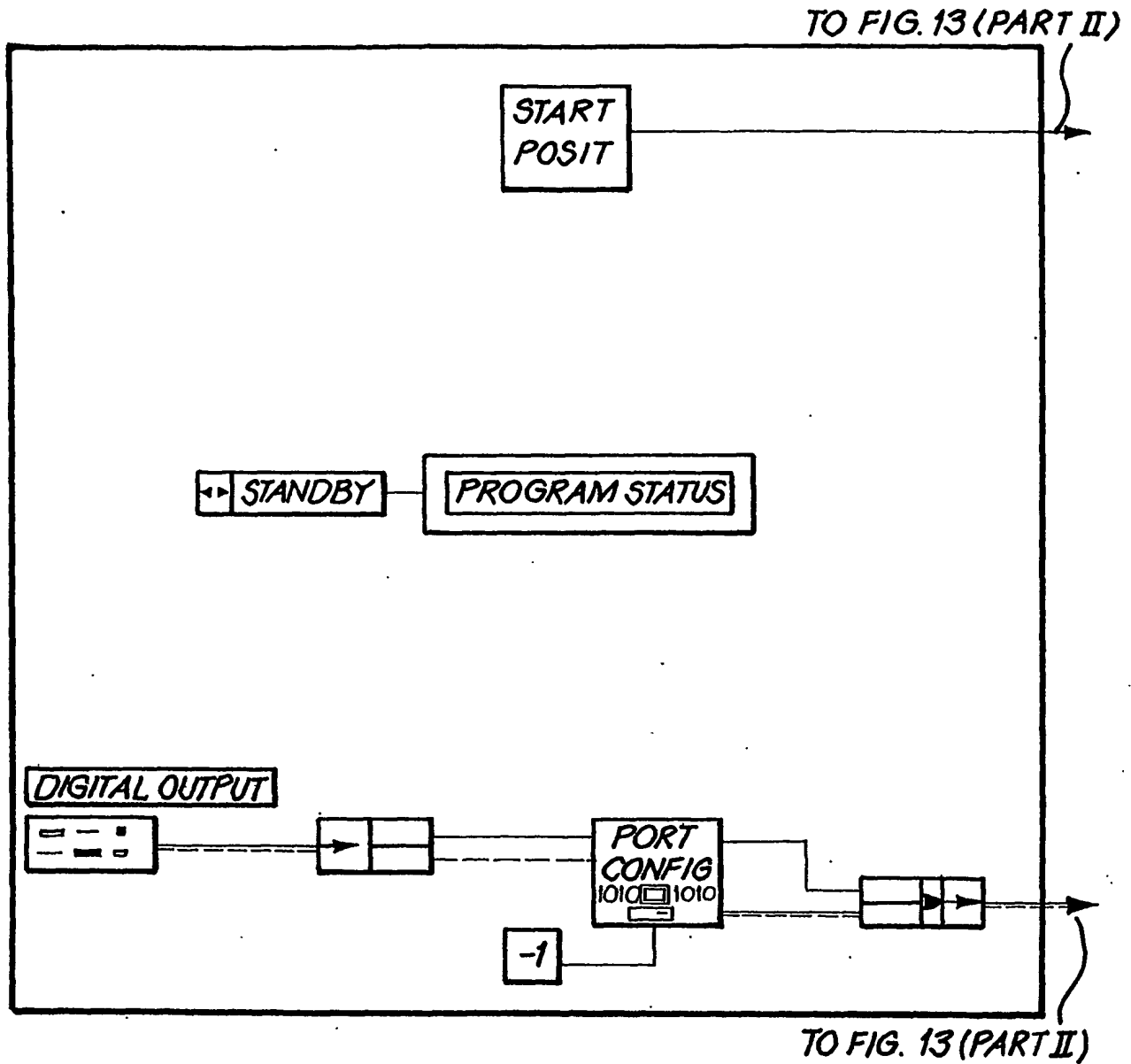
MOVE

EXIT

FIG. 12



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**FIG. 13**  
(PART I)

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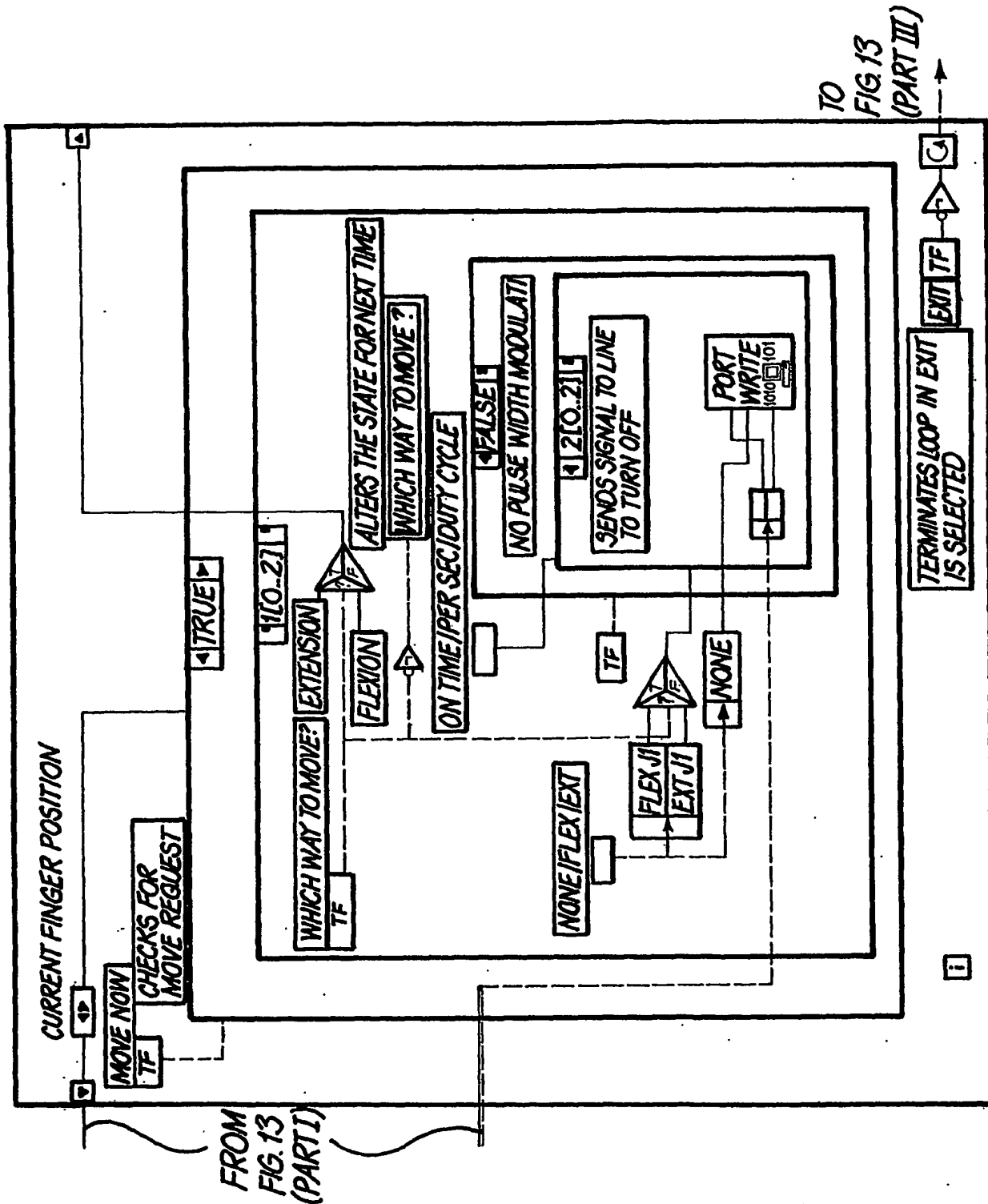
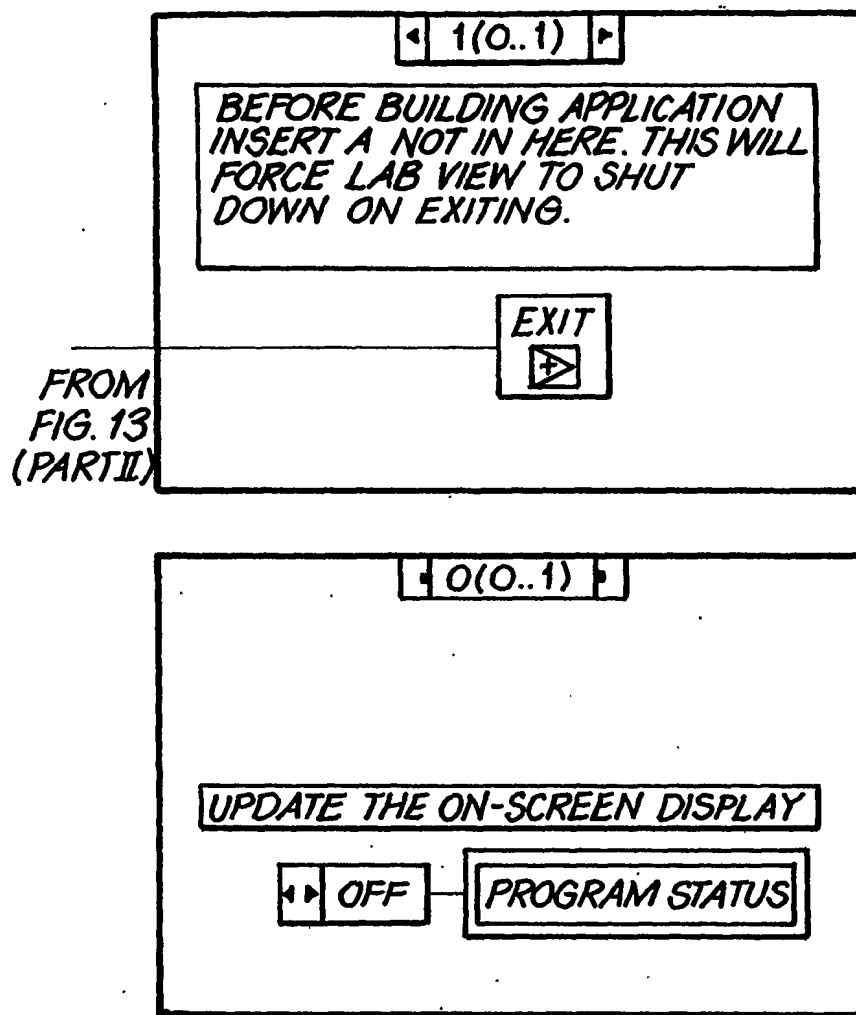


FIG. 13 (PART II)

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**FIG. 13**  
(PART III)

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↓ FROM FIG. 13 (PART II)

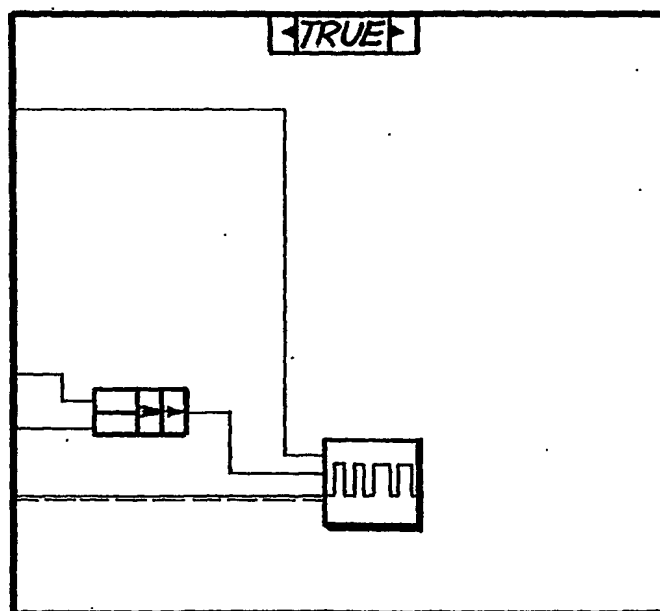
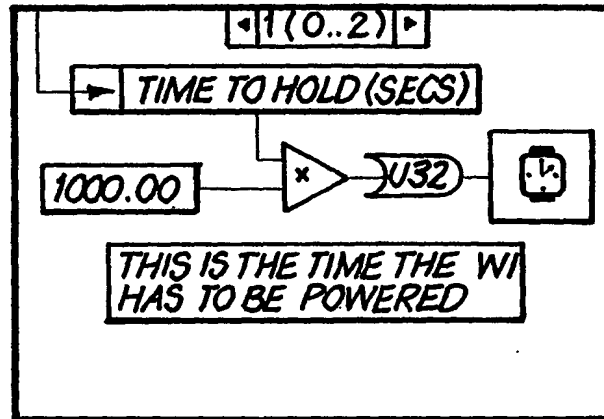
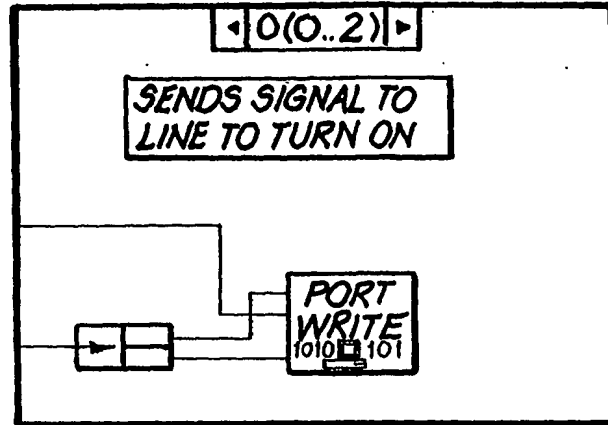
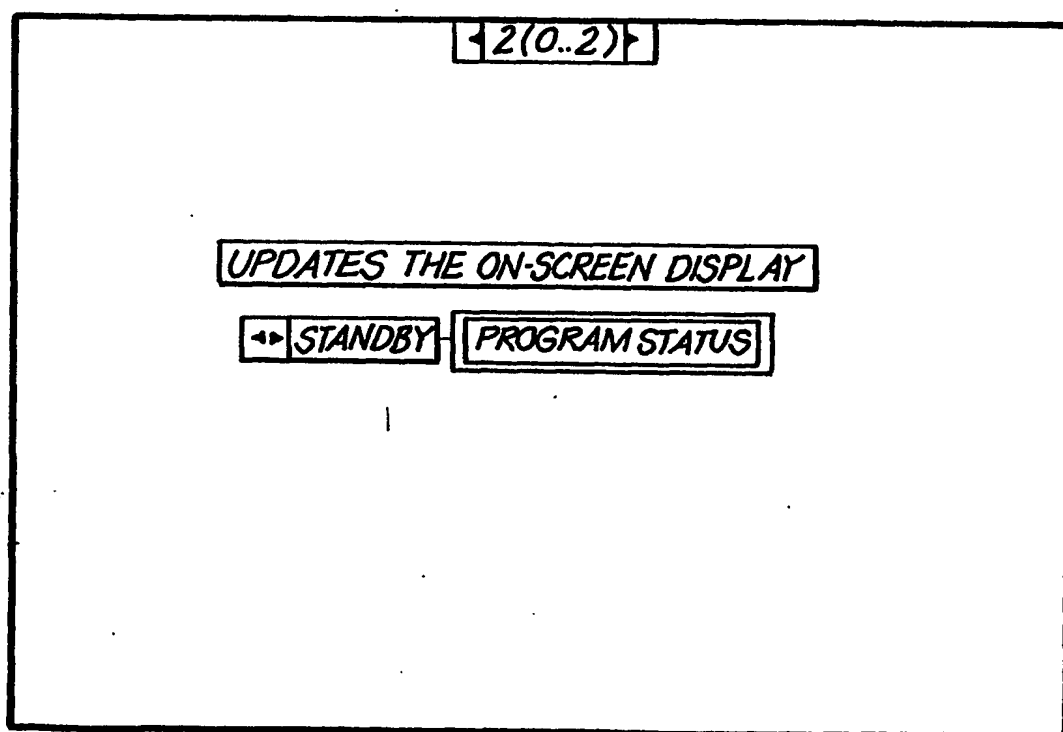
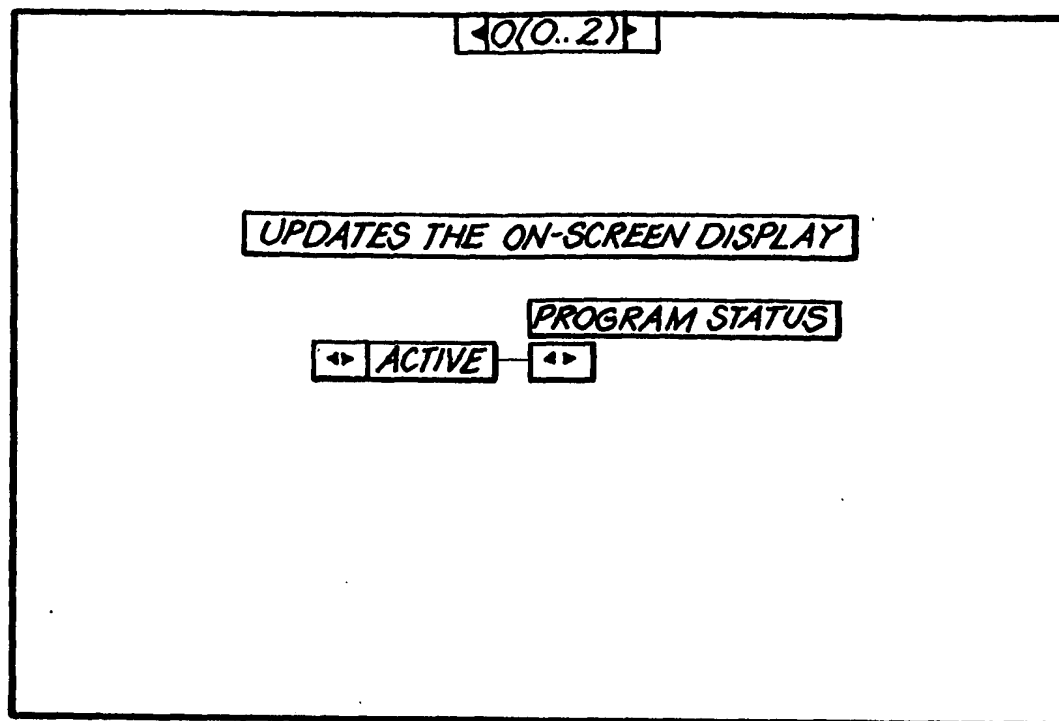


FIG. 13 (PART IV)

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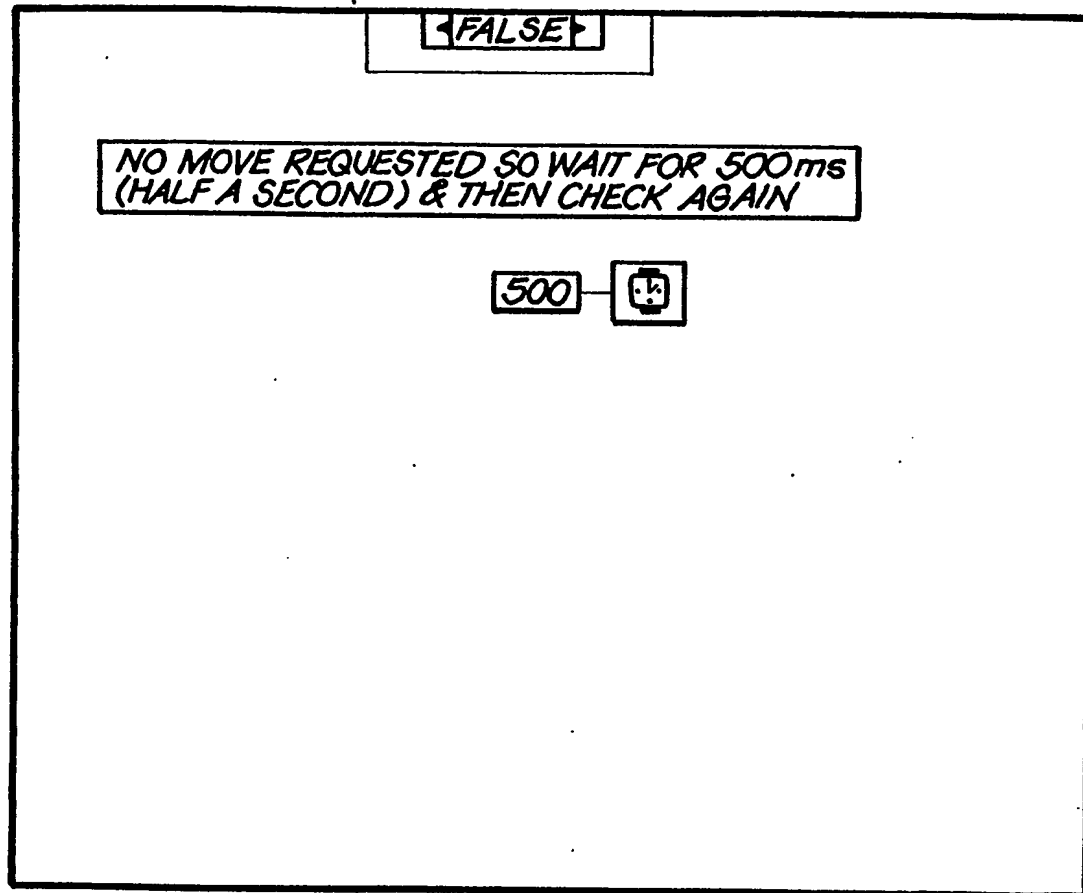


↓ TO FIG. 14 (PART II)

**FIG. 14**  
(PART I)

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↓ FROM FIG. 14 (PART I)



**FIG. 14**  
(PART II)

DEVICE 5 IS PCI-MIO-16XE-50 ON POWERMAC 3500 AND DAQCARD-A1-16E-4 ON POWERBOOK G3 REMEMBER TO CHANGE THIS IF USING THE PCI-DIO-96 OR ANOTHER COMPUTER

DIGITAL OUTPUT

device

5

digital channel

0

PCI-MIO-16XE-50 HAS ONE DIO PORT OF 8 LINES. THIS PORT IS REFERRED TO AS CHANNEL 0.

HIT WHITE ARROW TO START AN EXIT AT ANY TIME TO FINISH

PROGRAM STATUS

OFF

CURRENT FINGER POSITION

Flexion

WHICH WAY TO MOVE ?

EXTENSION | FLEXION

ORDER OF MOVEMENT

PROXIMAL + DISTAL | DISTAL -> PROXIMAL

WHICH JOINTS TO

J1 ☒ J2 ☐ J3 ☐

MOVE

EXIT

LINE PATTERNS FOR EACH STATE: EXTENSION LINES 0&2&4. FLEXION LINES 1&3&5

NONE	0
EXT 11	1
FLEX 11	110
EXT 12	100
FLEX 12	1000
EXT 13	10000
FLEX 13	100000

PULSE WIDTH MODULATION (PWM) ☒ OFF / ON

ON TIME / PER SECOND CYCLE

TIME TO POWER (secs)

20

CYCLES PER SECOND

10

% ON

50

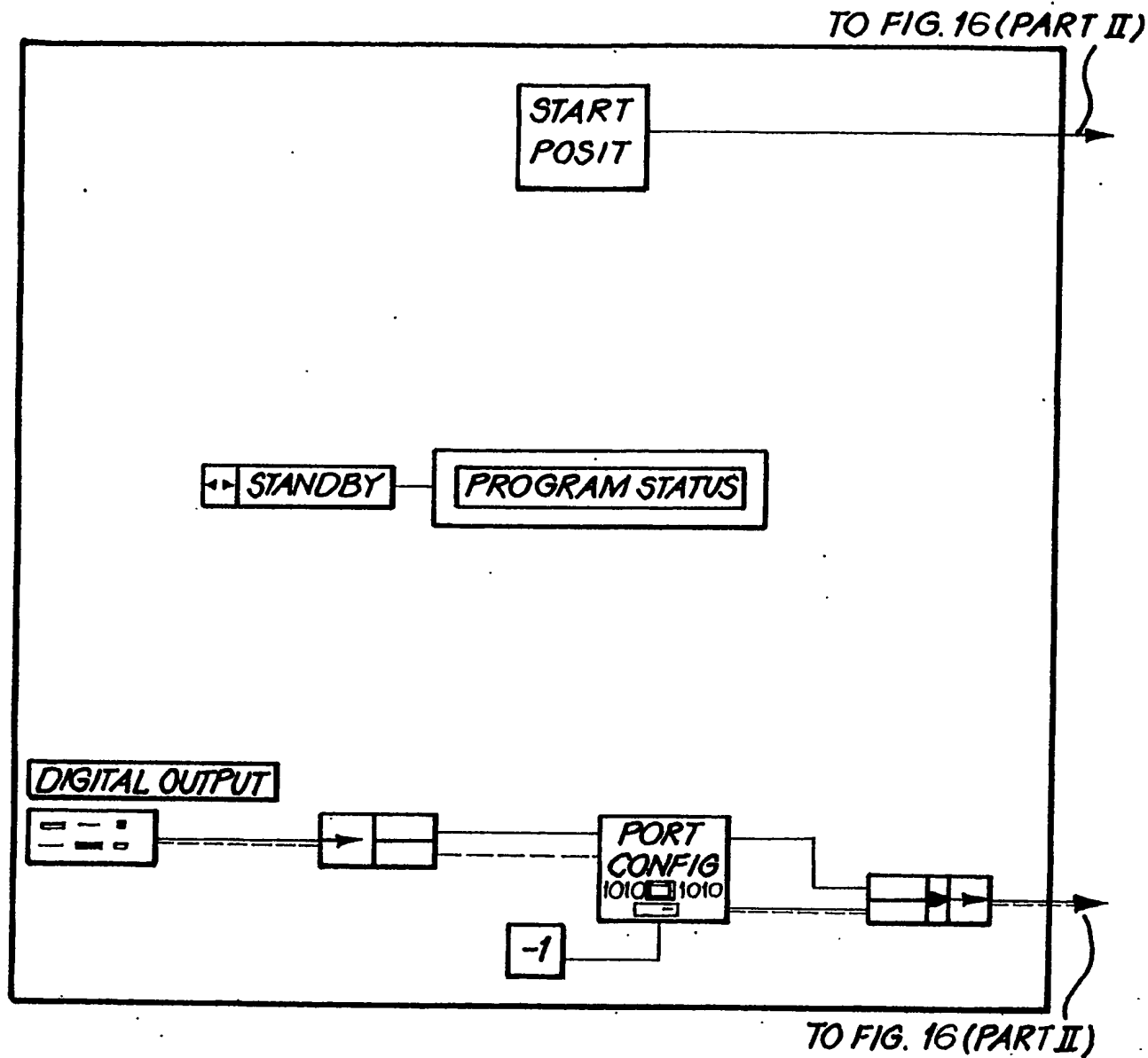
LED CLUSTER (NO PWM)

EXTENSIONS	OFF	6	OFF	4	OFF	2	OFF	0
FLEXIONS	OFF	7	OFF	5	OFF	3	OFF	1

"WHICH WAY TO MOVE?" AND "WHICH JOINTS?" ARE USED TO SELECT A PATTERN OF ACTIVATION.  
"ORDER OF MOVEMENT" IS NOT YET IMPLEMENTED.  
NOTE: TIMING IS THE SAME FOR ALL WIRES. "TIME TO POWER" MAY NEED CHANGING WHEN ACTIVATING INSULATED AND NON-INSULATED WIRES.

FIG. 15

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**FIG. 16**  
(PART I)



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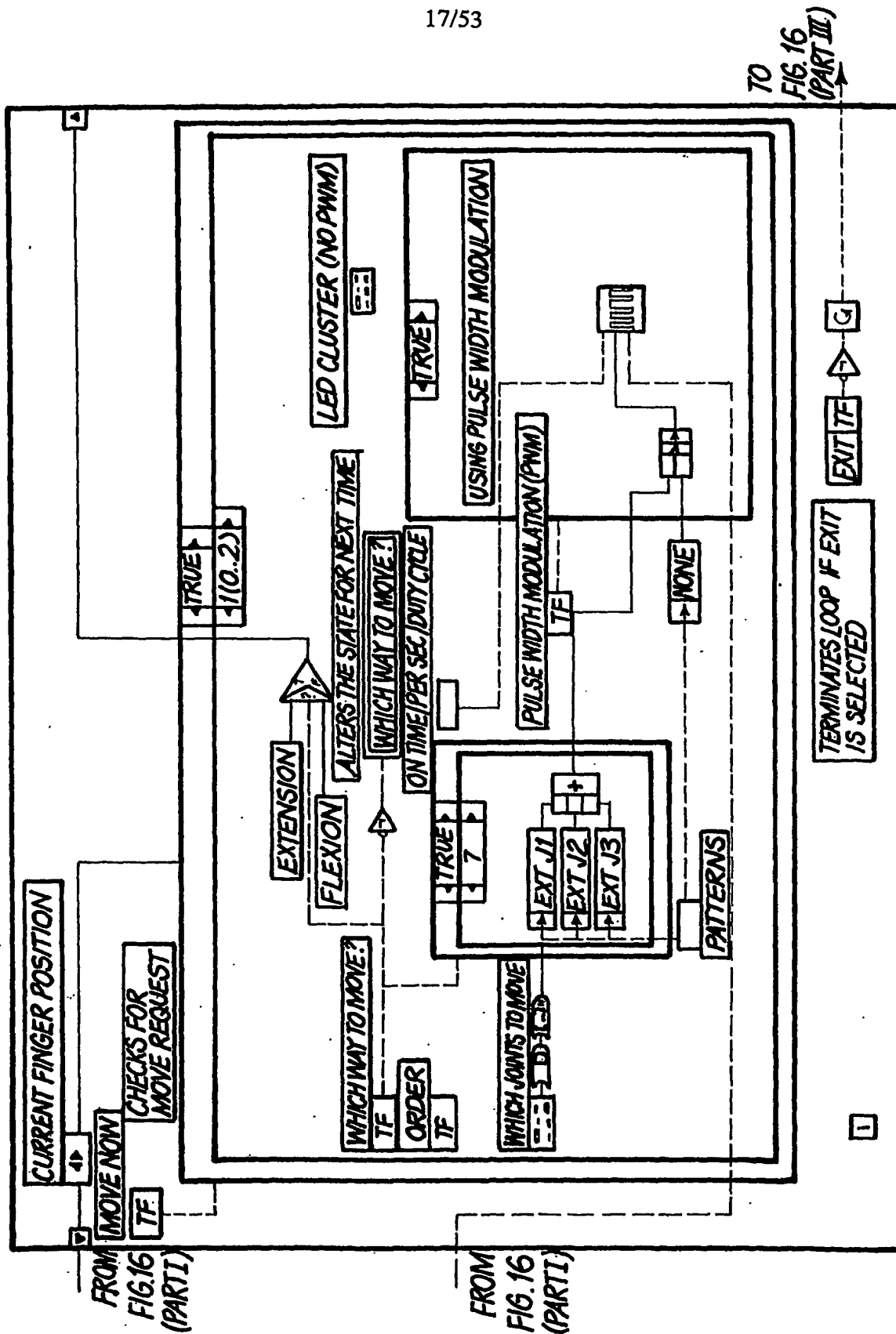


FIG. 16 (PART II)

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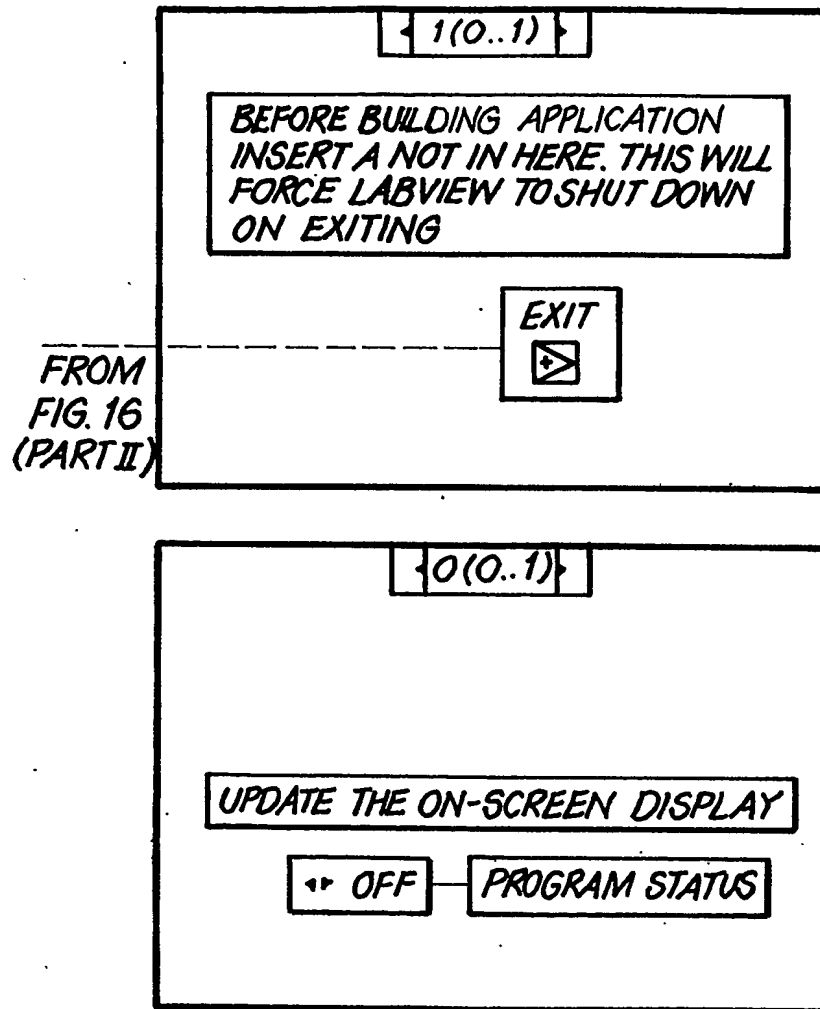


FIG. 16  
(PART III)

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↓ FROM FIG. 16 (PART II)

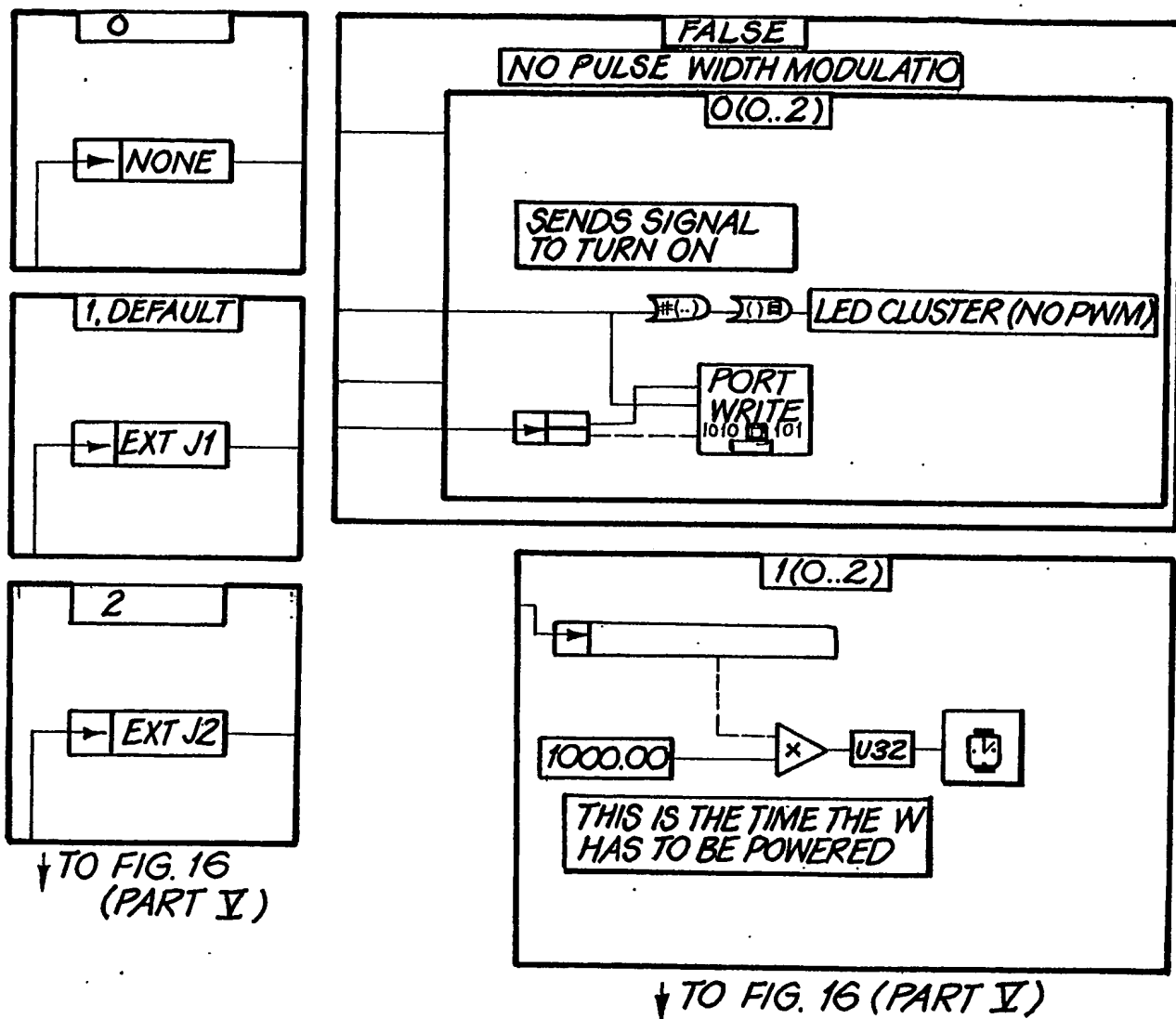
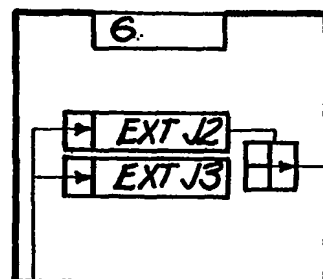
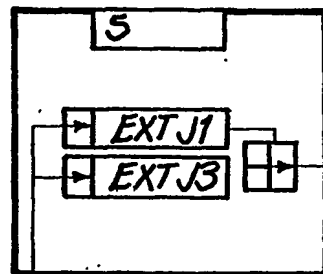
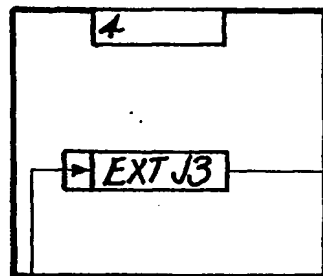
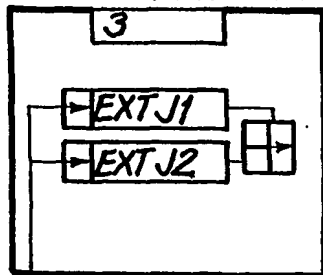


FIG. 16  
(PART IV)

↓ FROM FIG. 16 (PART IV)



↓ FROM FIG. 16 (PART IV)

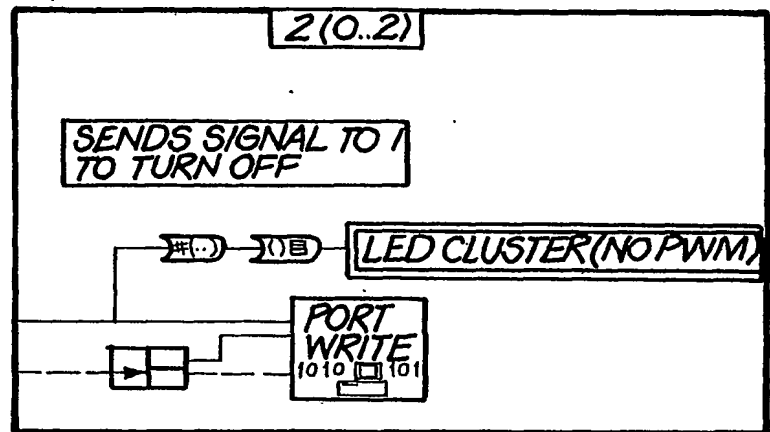


FIG. 16  
(PART V)

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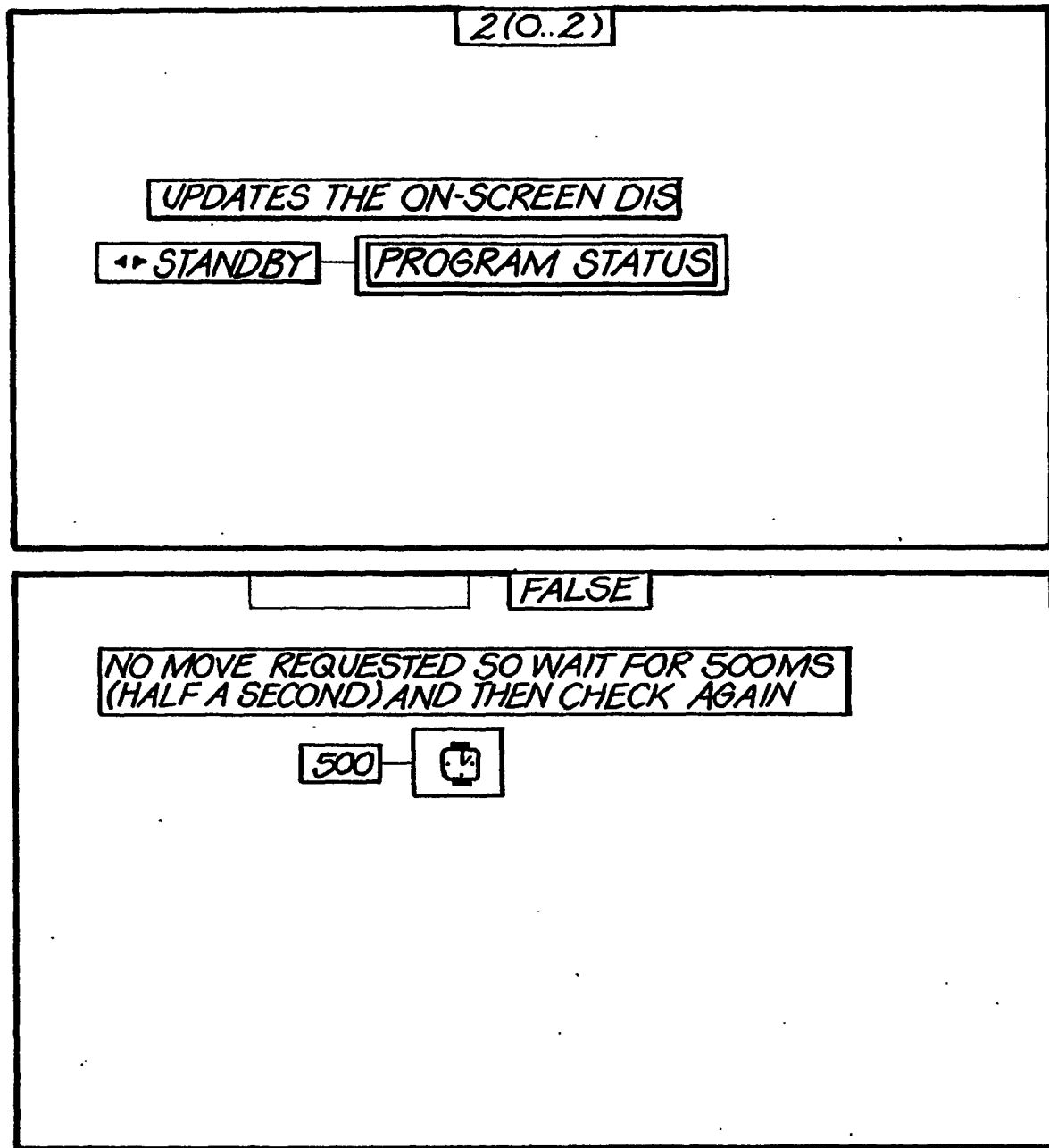
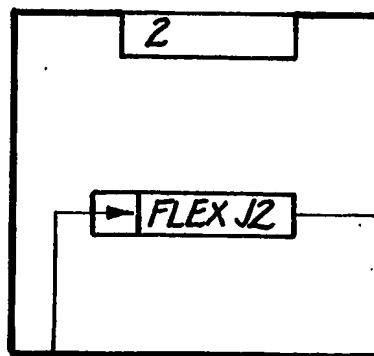
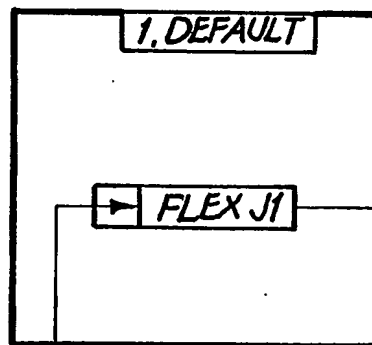
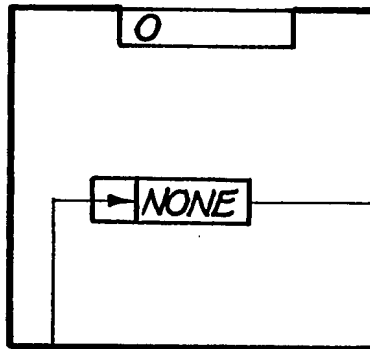
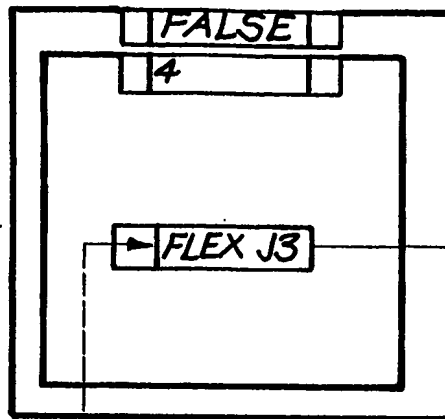


FIG. 17

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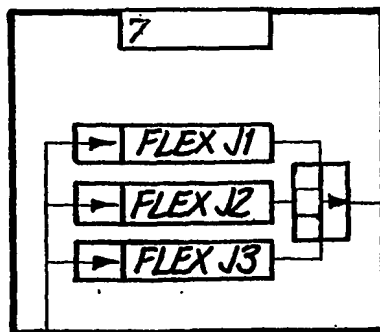
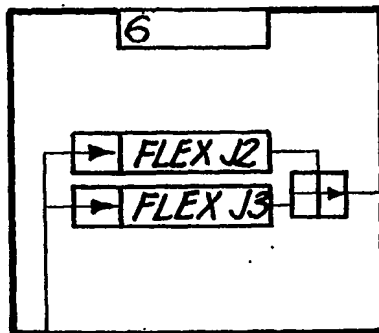
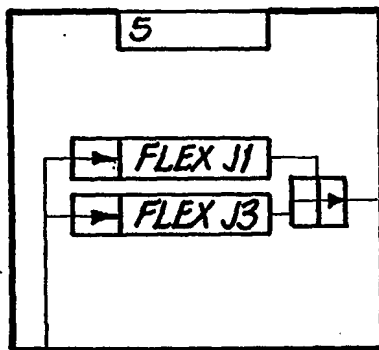
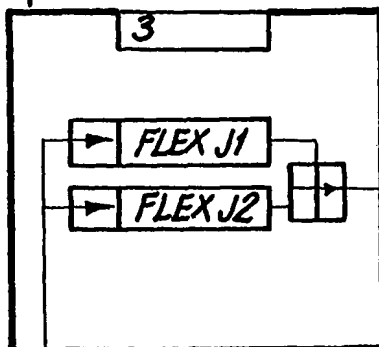


↓ TO FIG. 18 (PART II)

**FIG. 18**  
(PART I)

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↓ FROM FIG. 18 (PART I)



↓ TO FIG. 18 (PART III)

FIG. 18  
(PART II)

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↓ FROM FIG. 18 (PART II)

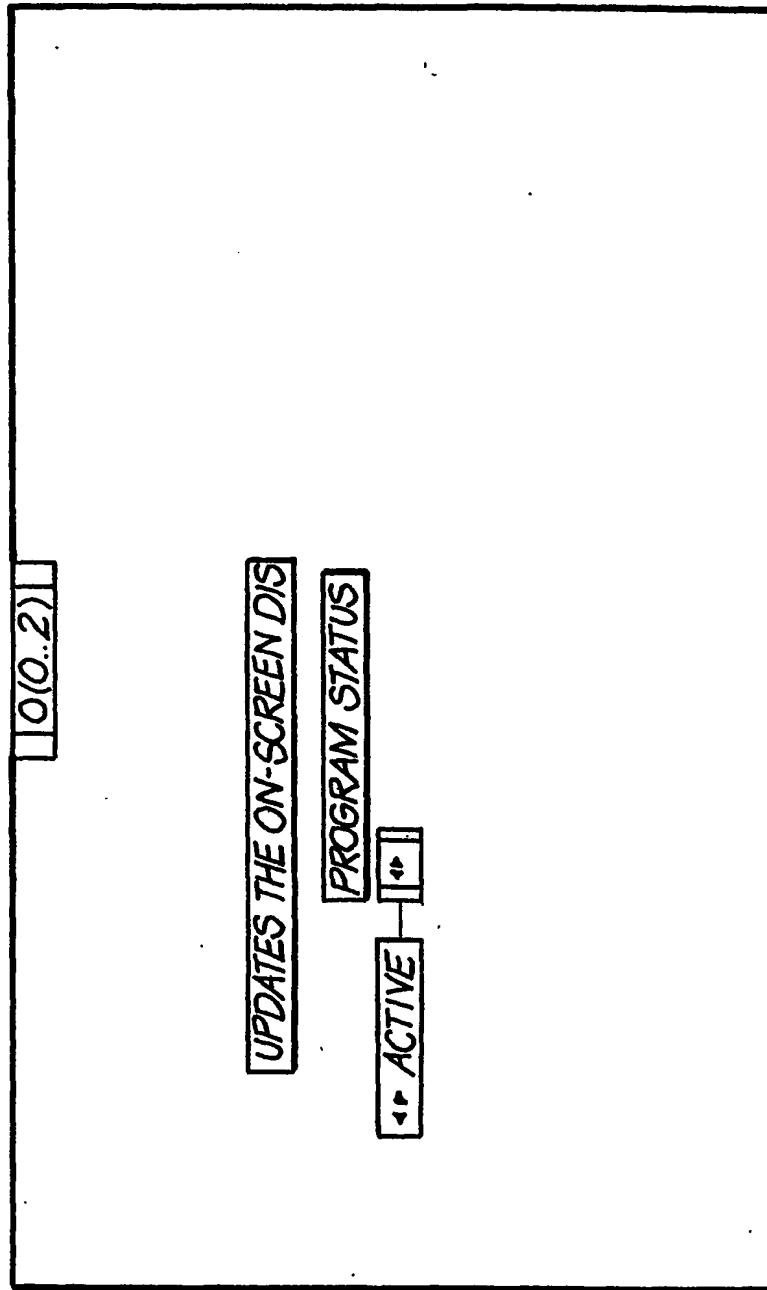


FIG. 18  
(PART III)



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**TIME / PER SEC / DUTY CYCLE**

**TIME TO HOLD (SECS)**  
 ▲  ▼

**CYCLES PER SECOND**  
 ▼

**% ON**  
 ▲  ▼

**TO SHOW POWER STATE**

☐

OFF

ON

**LINE PATTERNS**

ON PATTERN ▲  ▼

OFF PATTERN ▲  ▼

**TASK ID / ERROR CLUSTER**

**TASK ID**  
 ▲  ▼

**ERROR OUT**

NO ERROR

CODE  
0

SOURCE

**FLOOR (x,y)**

**LED CLUSTER**

EXTENSORS	OFF	6	OFF	4	OFF	2	OFF	0
FLEXORS	OFF	7	OFF	5	OFF	3	OFF	1

FIG. 19

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**TIME / PER SEC / DUTY CYCLE**

TIME TO HOLD (SECS)  
 ⬆ 2.0

CYCLES PER SECOND  
 10 ▼

% ON  
 ⬆ 50

TO SHOW POWER STATE  
☐  
 OFF  
☐  
 ON  
☐

**LINE PATTERNS**

ON PATTERN ⬆ x 0

OFF PATTERN ⬆ x 0

**TASK ID / ERROR CLUSTER**

TASK ID  
 ⬆ x 0

ERROR OUT

NO ERROR ⬆ CODE  
 0

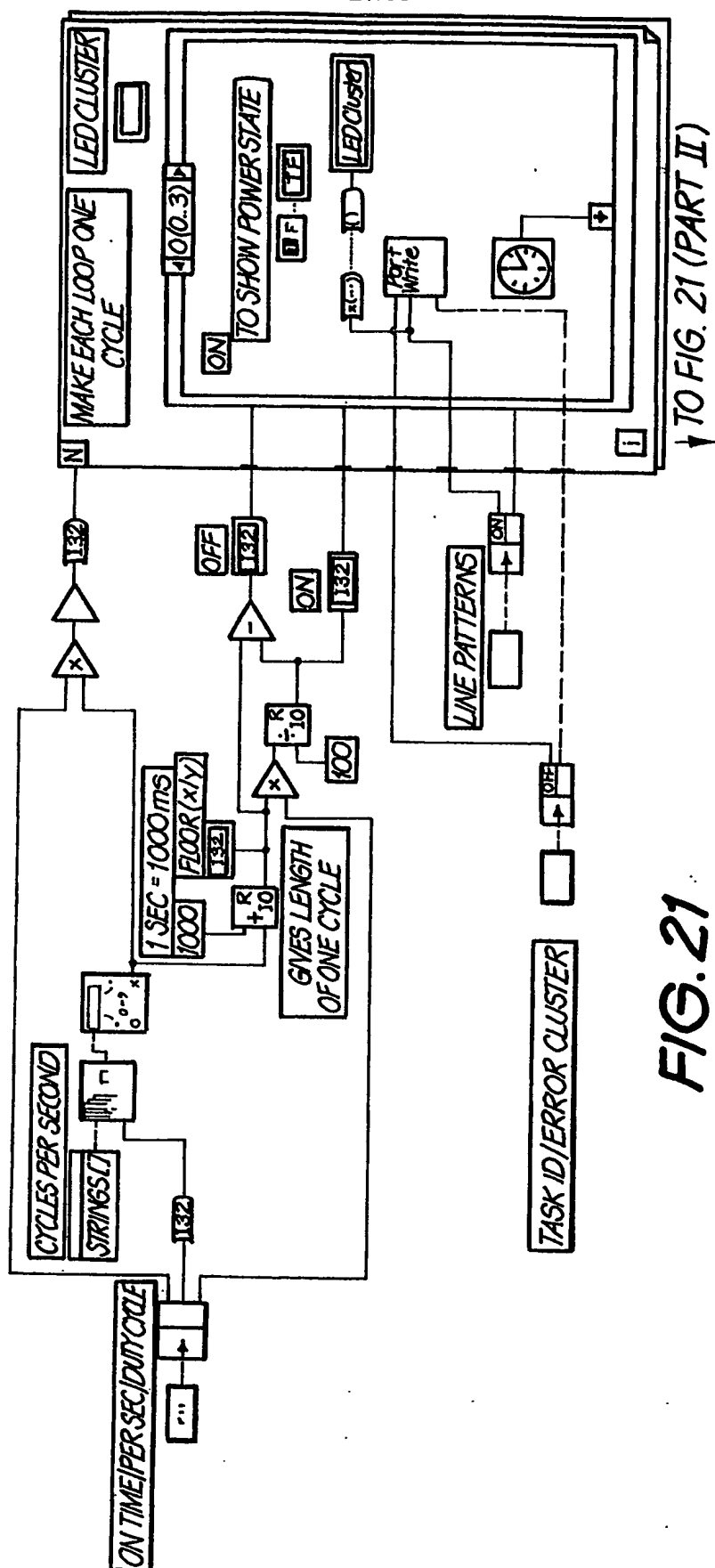
SOURCE

FLOOR (x,y) x-y

**LED CLUSTER**

EXTENSORS	OFF	6	OFF	4	OFF	2	OFF	0
FLEXORS	OFF	7	OFF	5	OFF	3	OFF	1

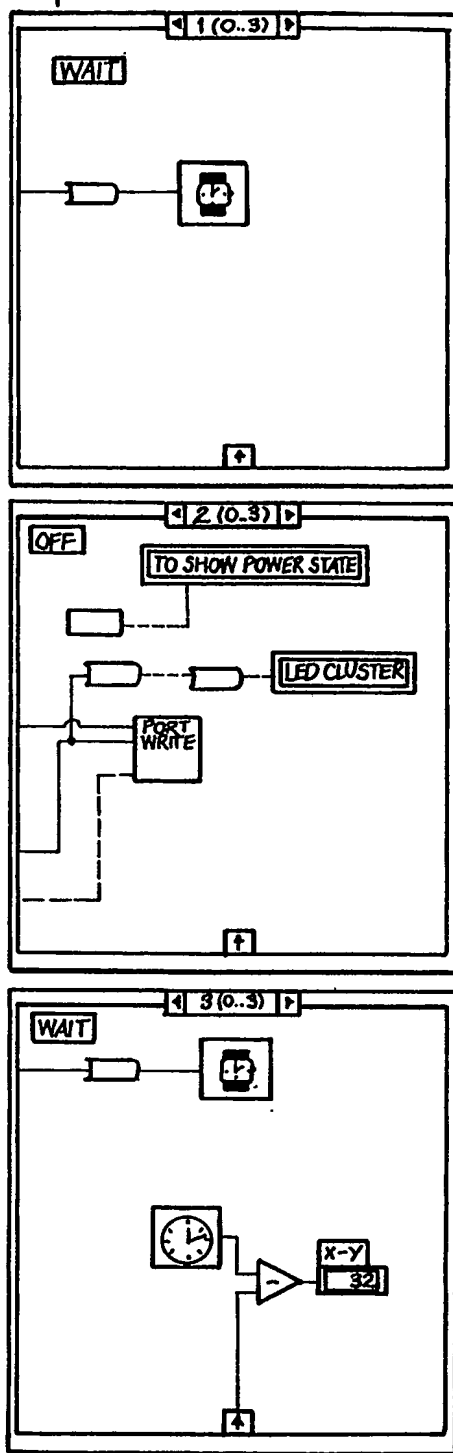
FIG. 20



**FIG. 21**  
**(PART I)**

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↓ FROM FIG. 21 (PART I)



**FIG. 21**  
(PART II)

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**DEVICE 5 IS PCI-MIO-16XE-50  
ON POWERMAC 9500 AND  
DAQCARD-A1-16E-4 ON  
POWERBOOK G3 REMEMBER  
TO CHANGE THIS IF USING  
THE PCI-DIO-96 ON ANOTHER  
COMPUTER**

**DIGITAL OUTPUT**

DEVICE

DIGITAL CHANNEL

PCI-MIO-16XE-50 HAS ONE  
DIO PORT OF 8 LINES. THIS PORT  
IS REFERRED TO AS CHANNEL 0.

**HIT WHITE ARROW TO START &  
EXIT AT ANY TIME TO FINISH**

**PROGRAM STATUS**

**OFF**

**CURRENT FINGER POSITION**

**Flexion**

**WHICH WAY TO MOVE?**

EXTENSION ON

FLEXION ON

**ORDER OF MOVEMENT**

PROXIMAL  
→ DISTAL

DISTAL  
→ PROXIMAL

**WHICH JOINTS TO**

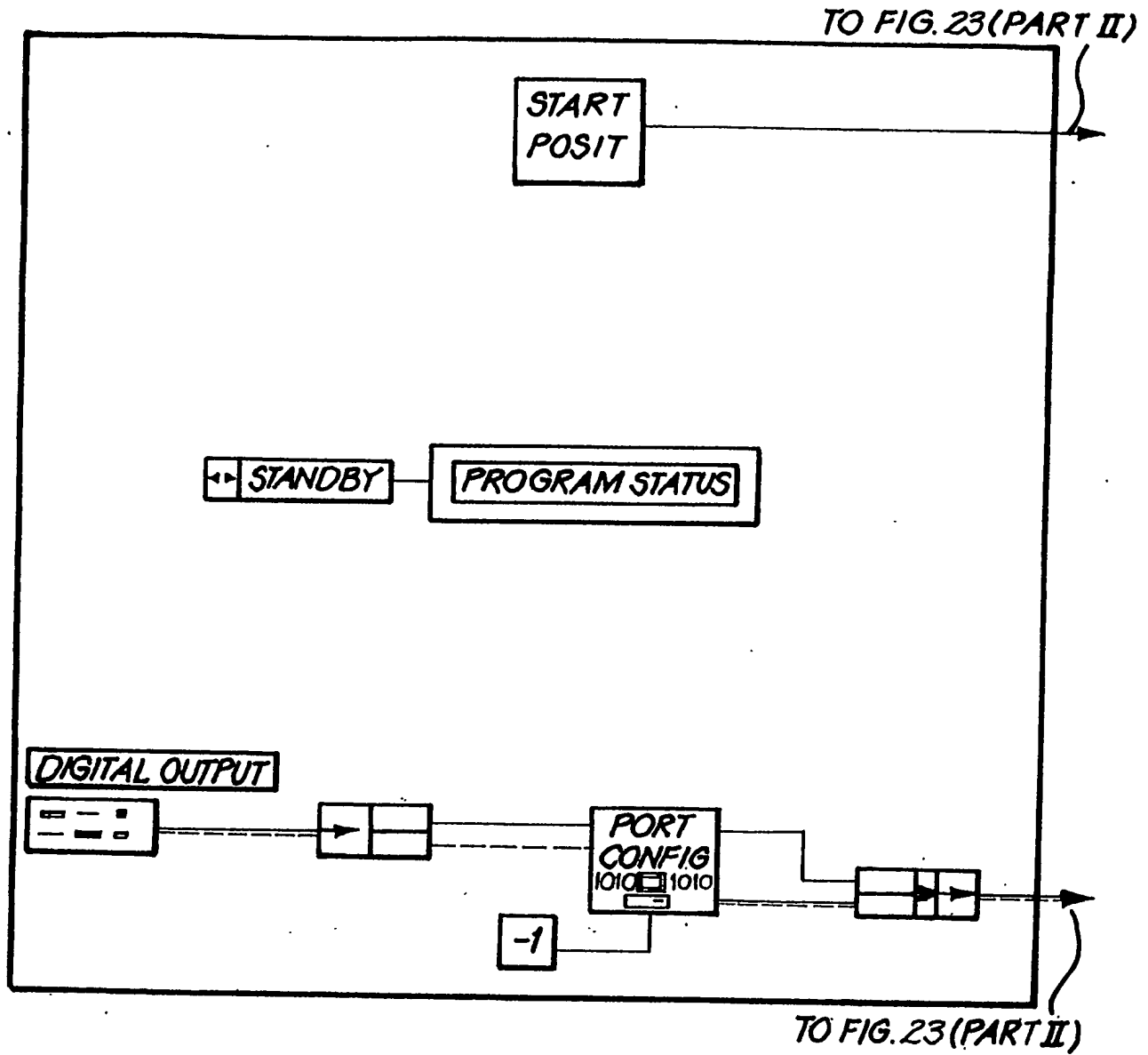
☒ J1
 ☐ J2
 ☐ J3
 ☐ J4

MOVE

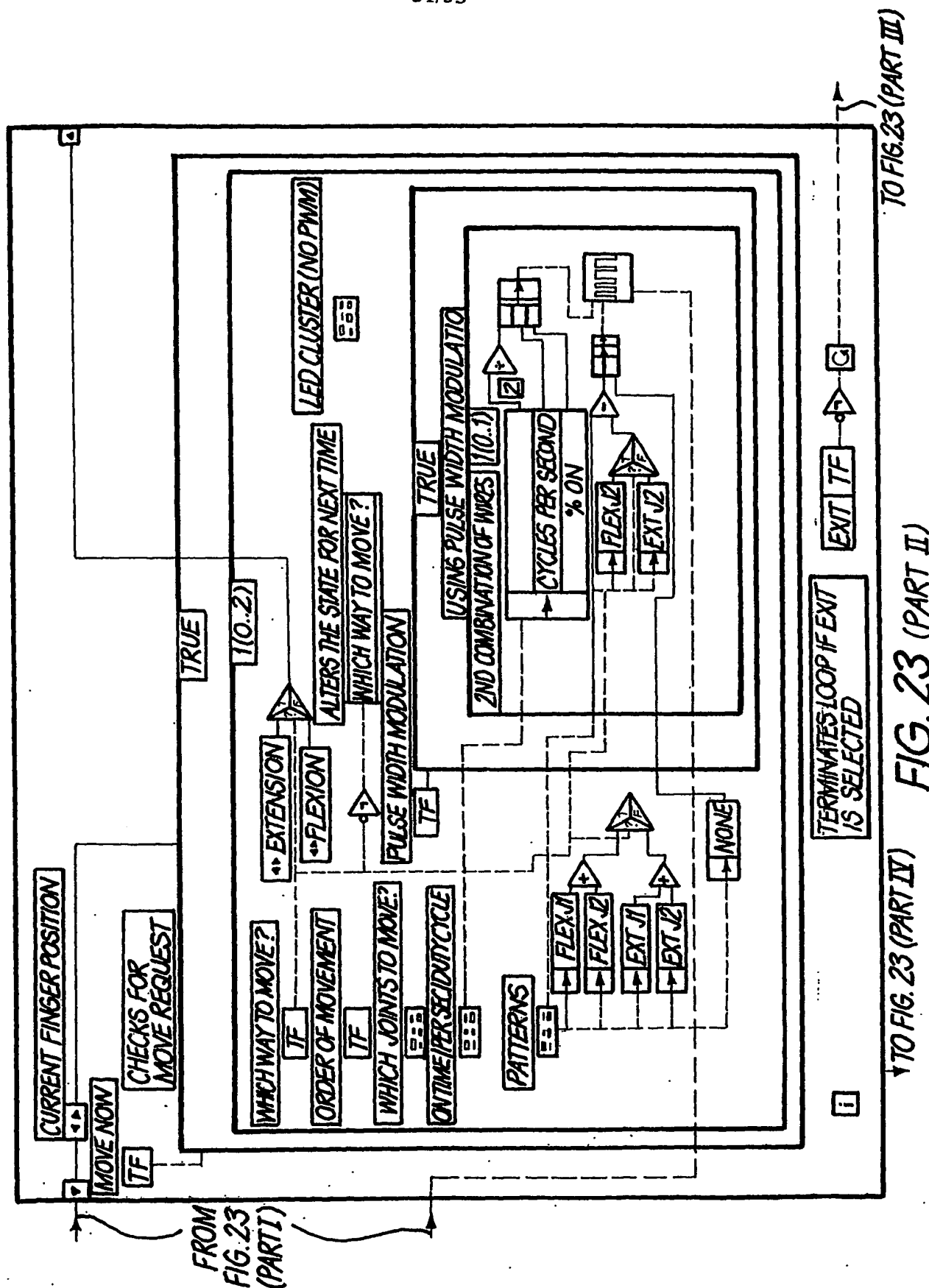
EXIT

FIG. 22

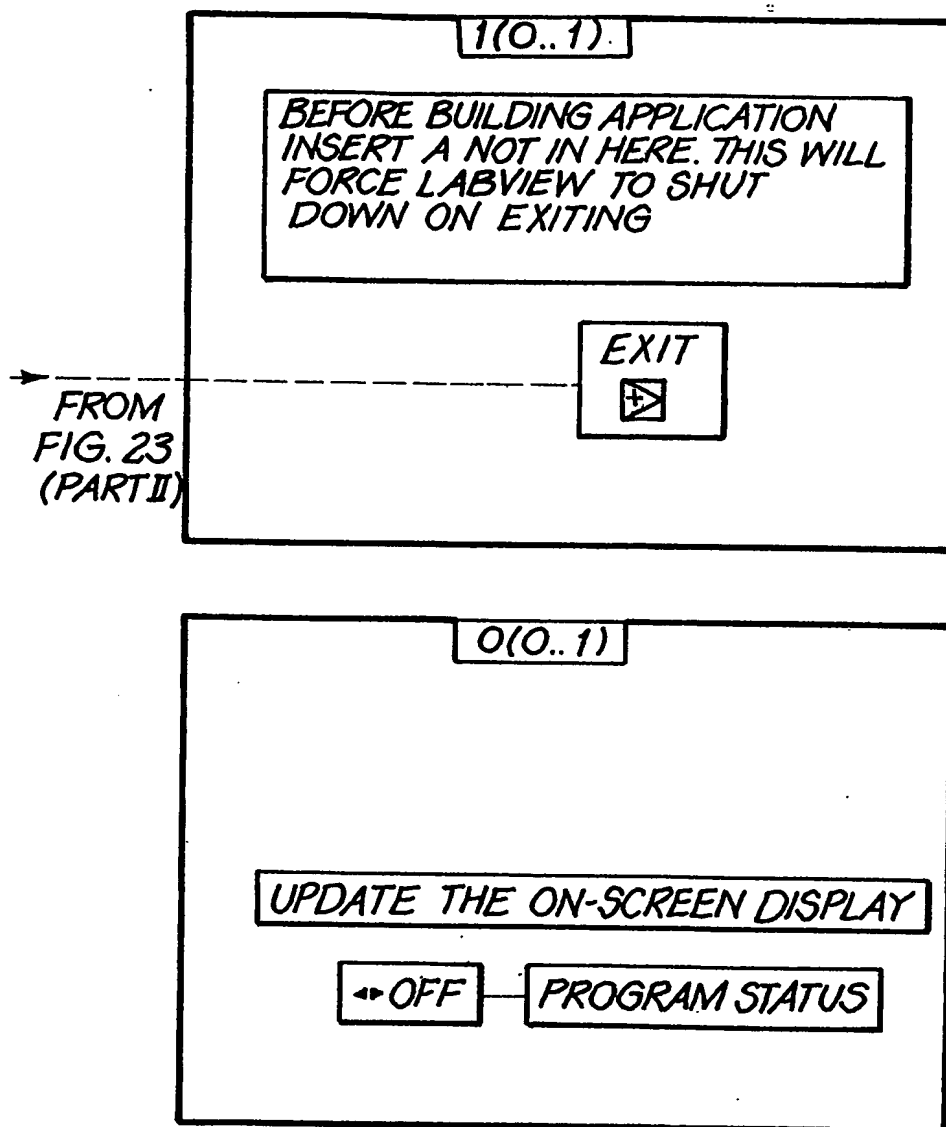
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**FIG. 23**  
(PART I)



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**FIG. 23**  
(PART III)



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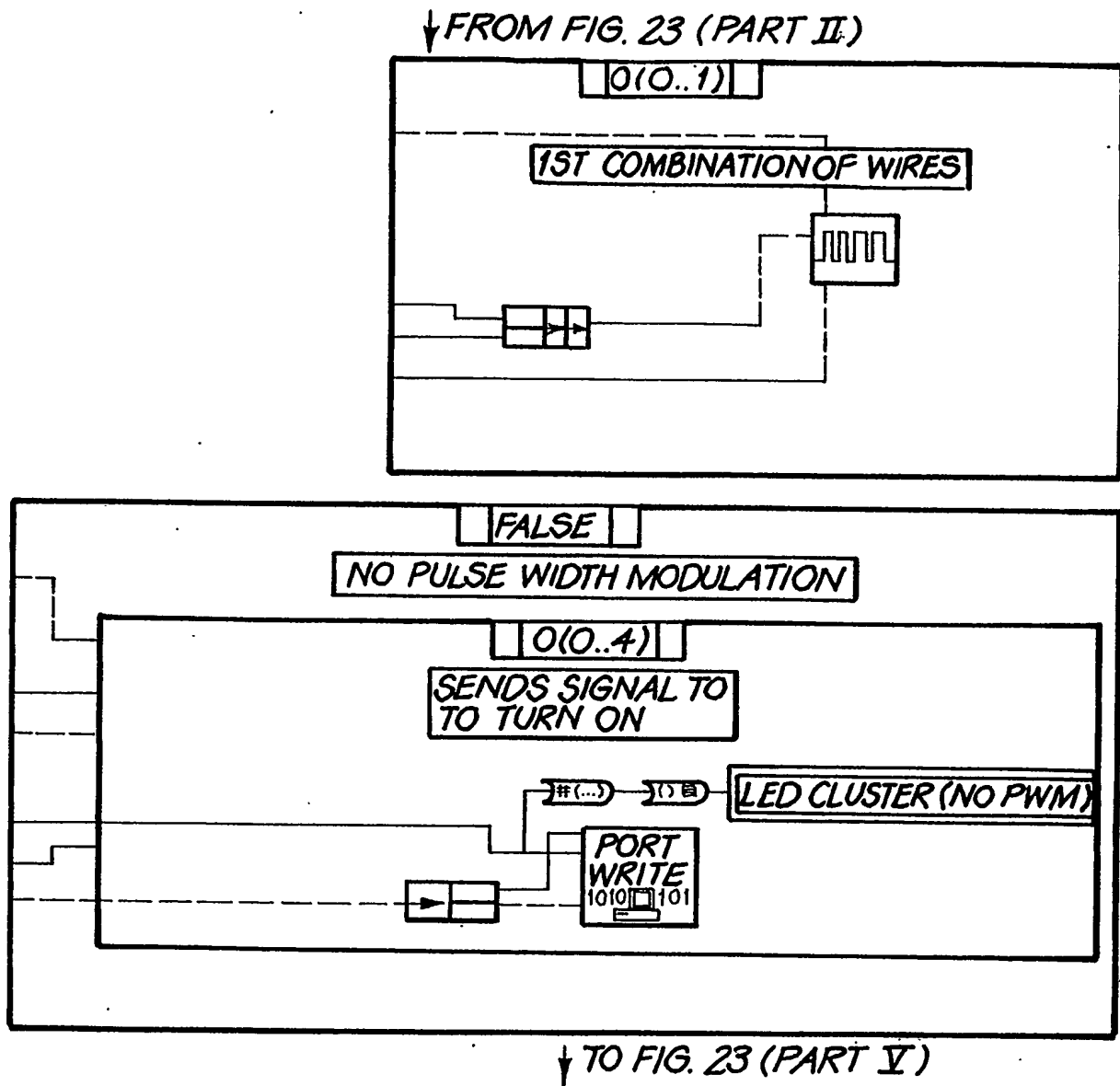
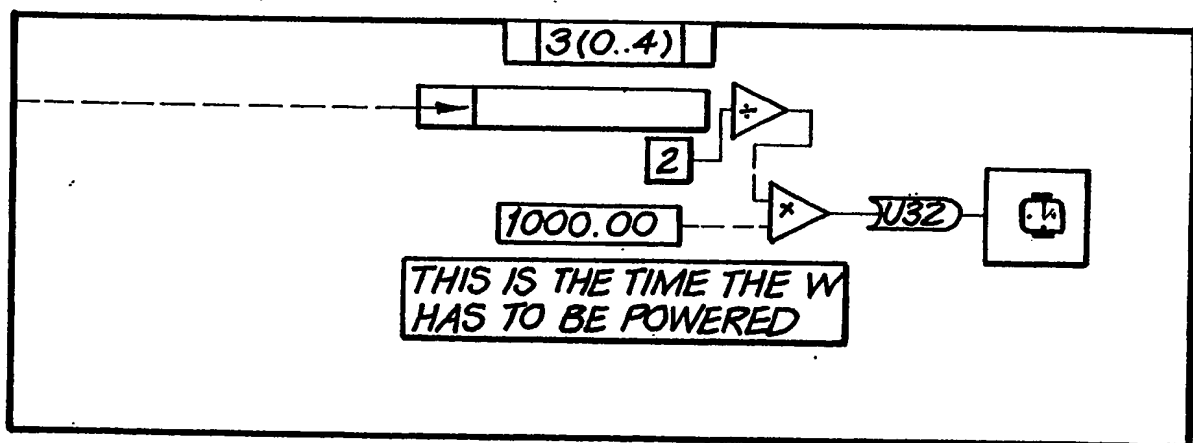
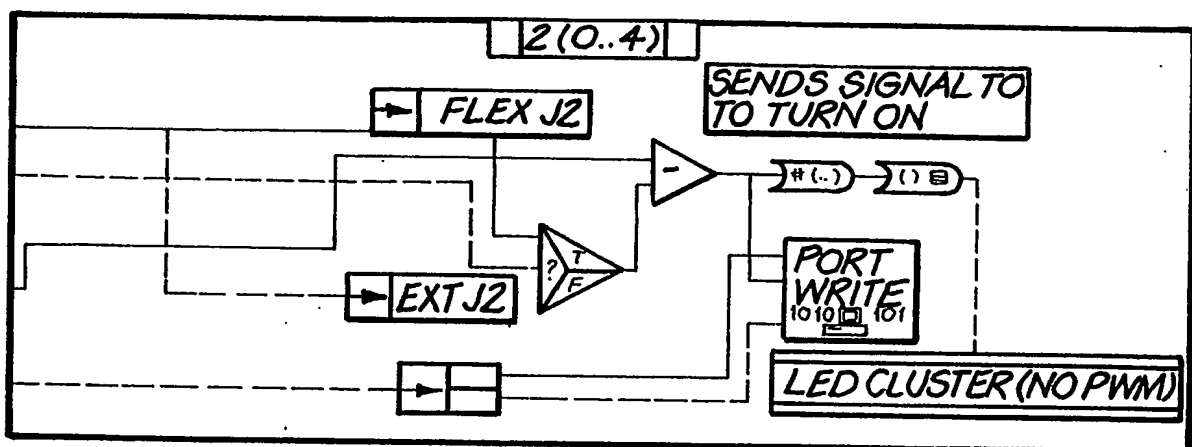
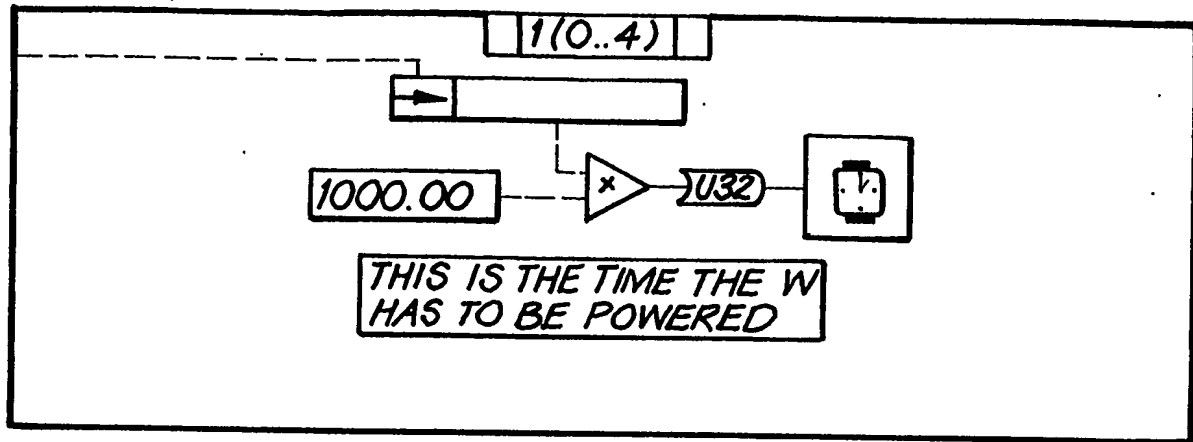


FIG. 23  
(PART IV)

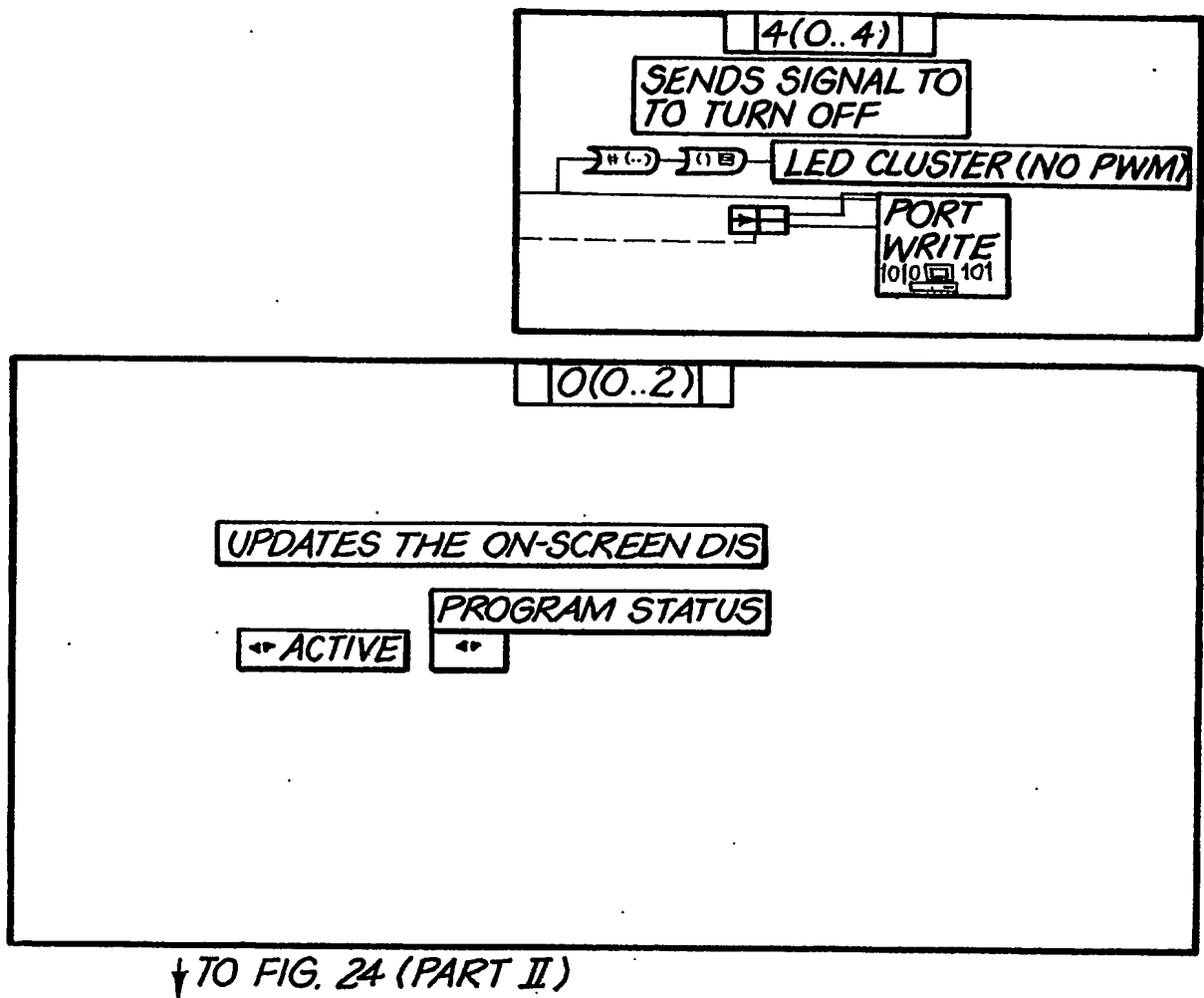
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↓ FROM FIG. 23 (PART IV)



**FIG. 23**  
(PART V)

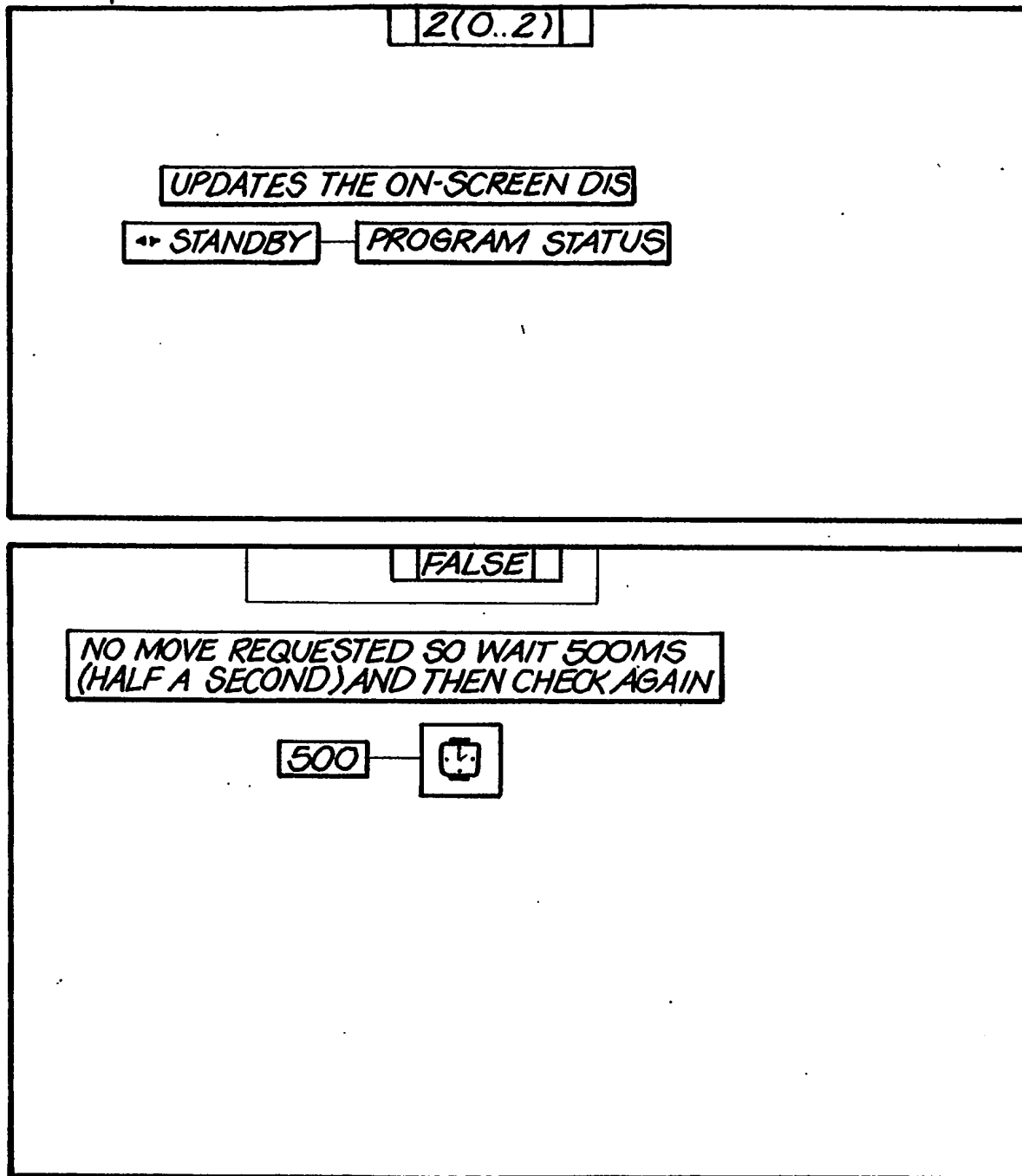
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**FIG. 24**  
(PART I)

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↓ FROM FIG. 24 (PART I)



**FIG. 24**  
(PART II)

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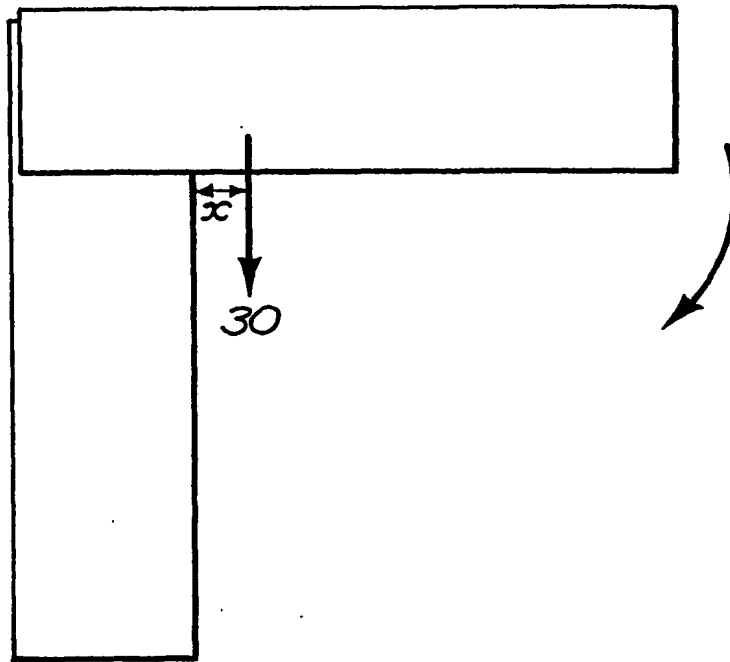


FIG. 25

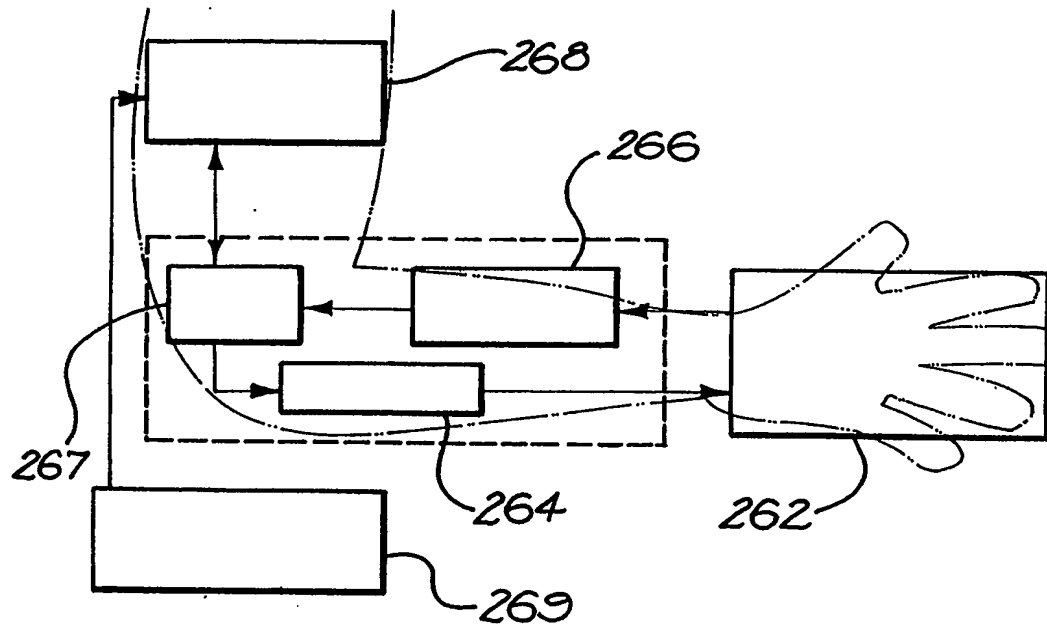


FIG. 26

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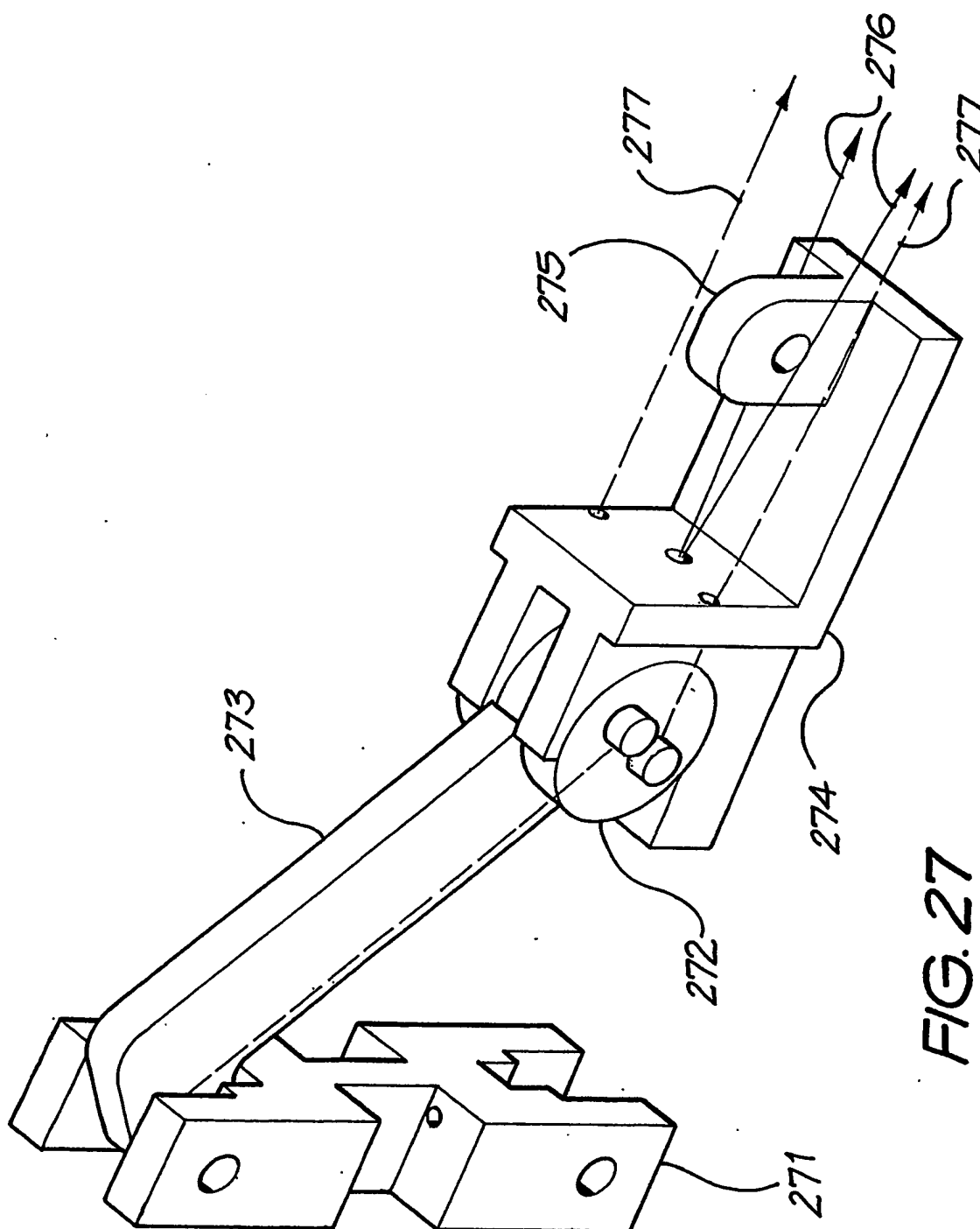


FIG. 27

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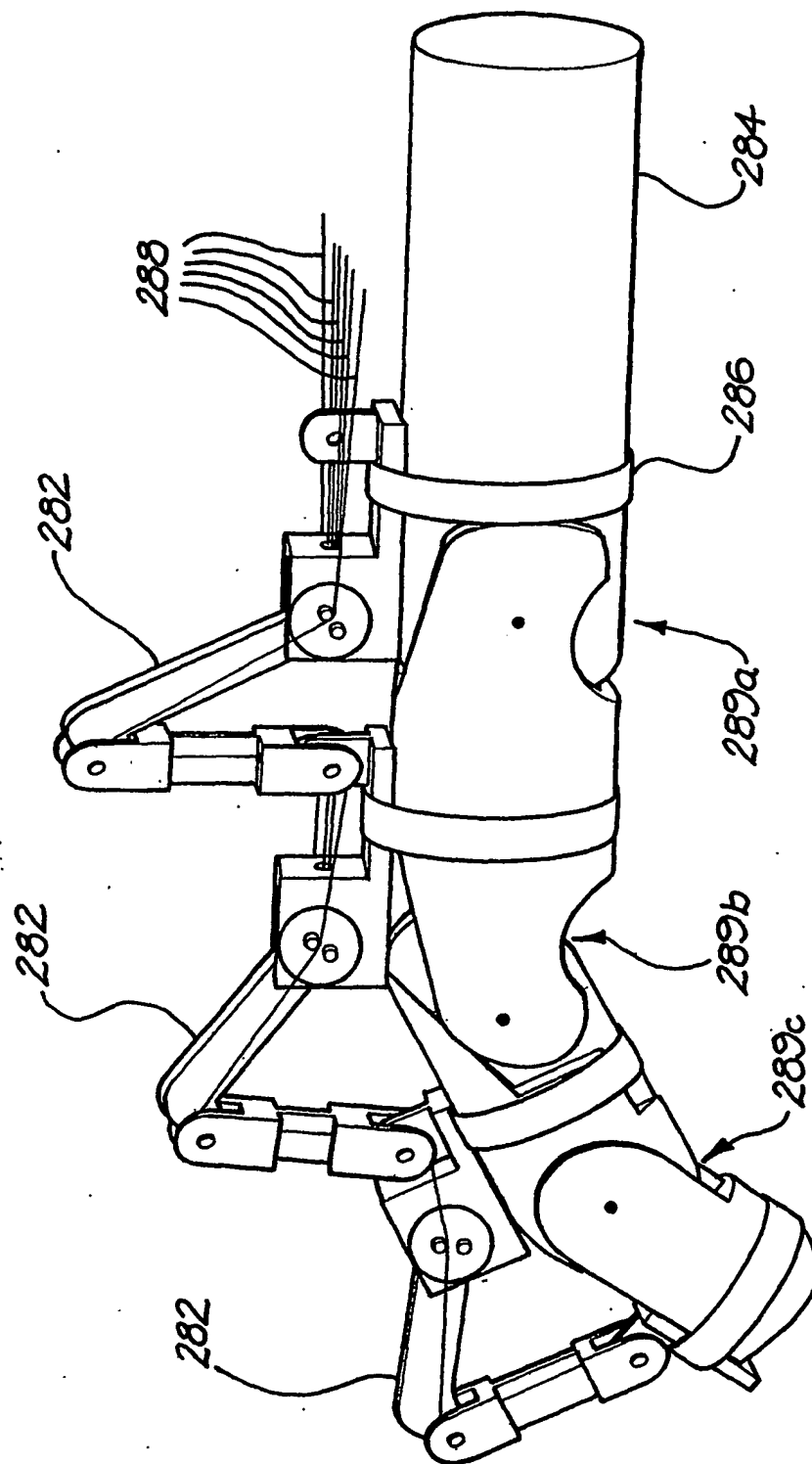
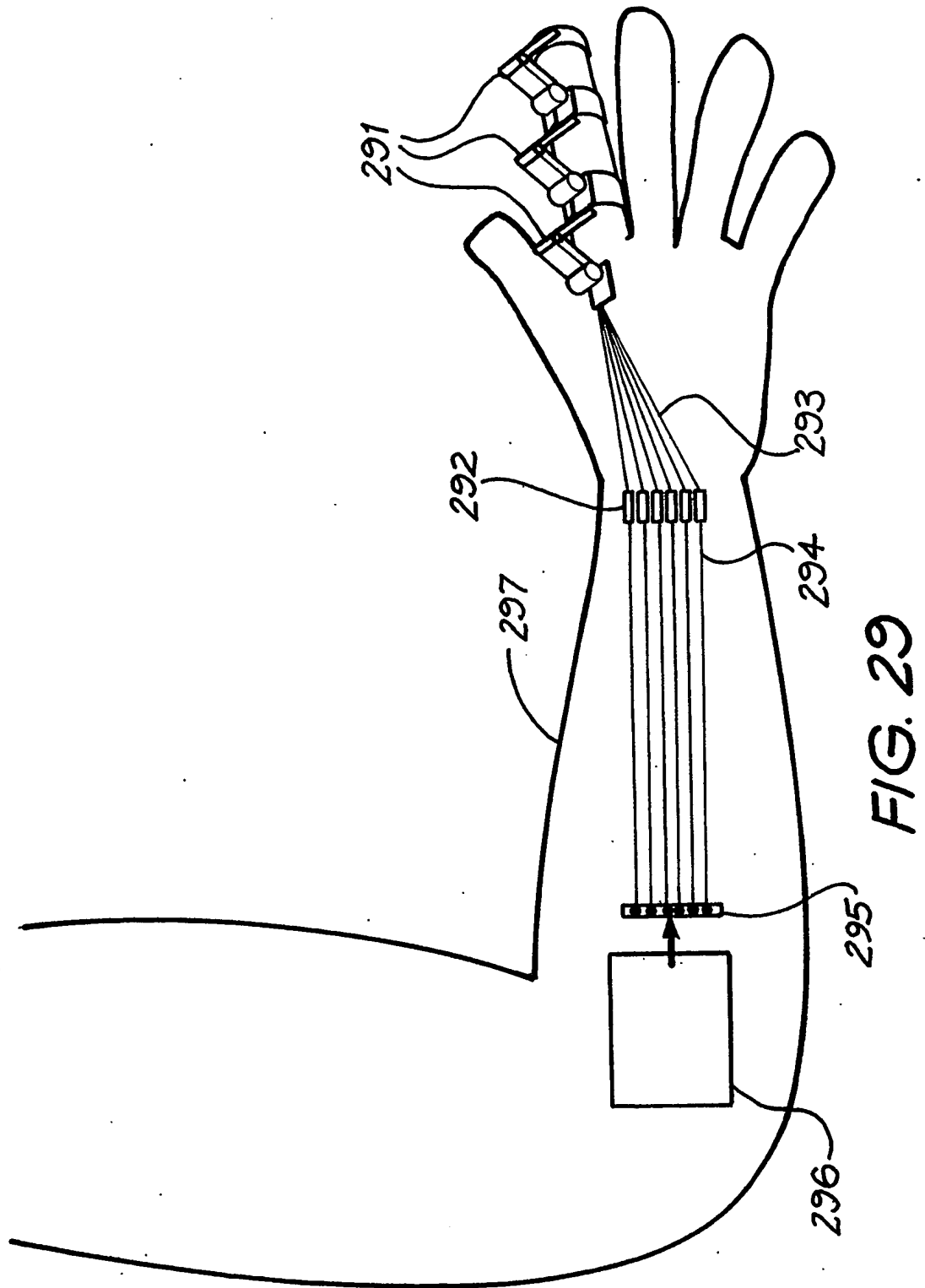


FIG. 28



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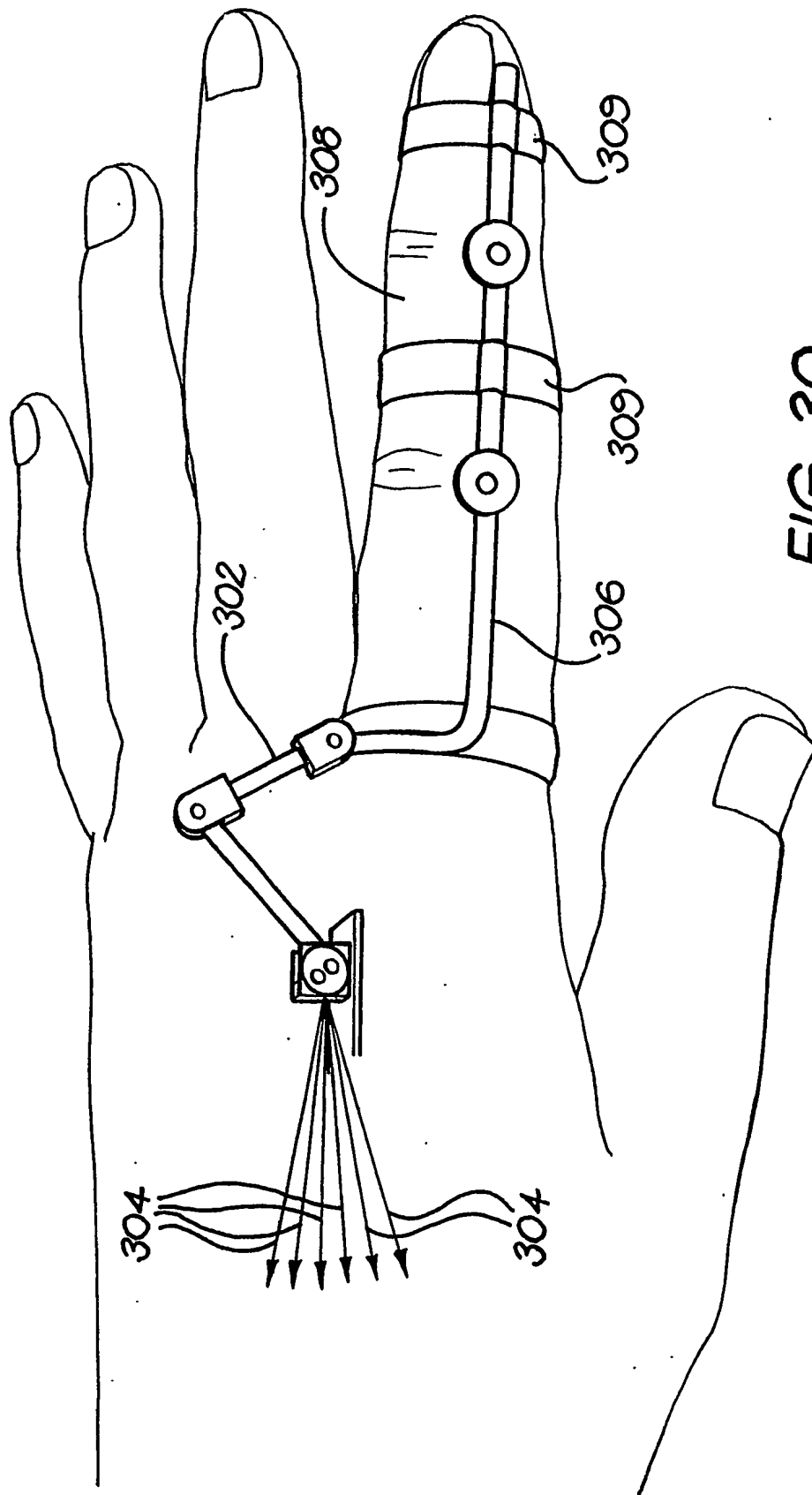


FIG. 30

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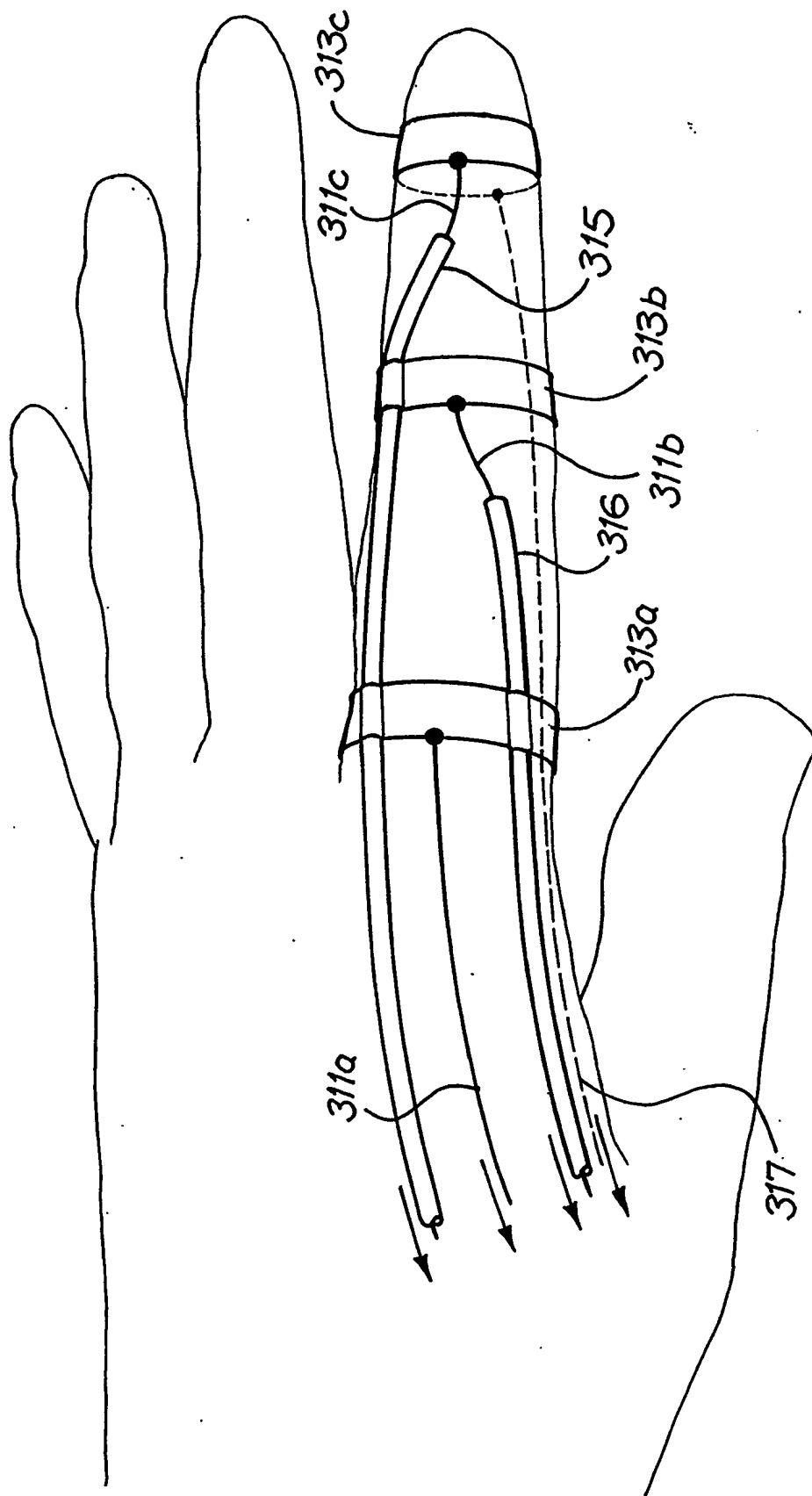


FIG. 31

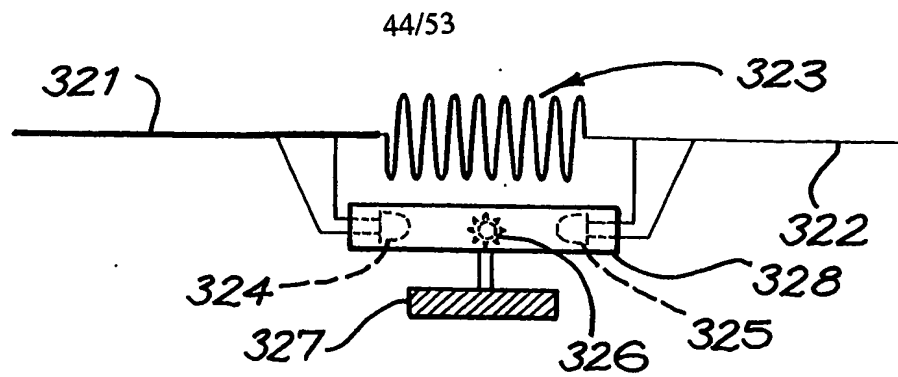


FIG. 32

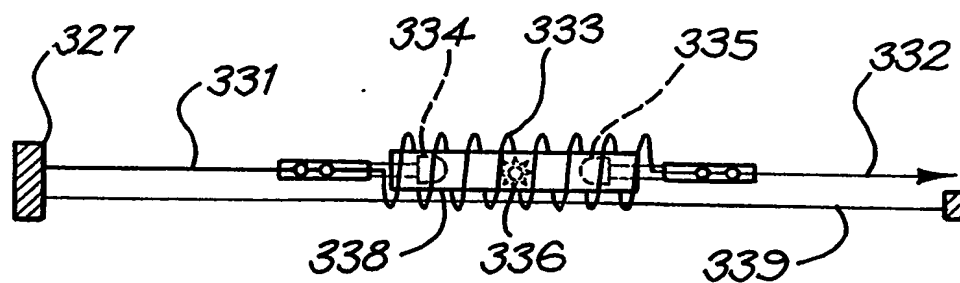


FIG. 33

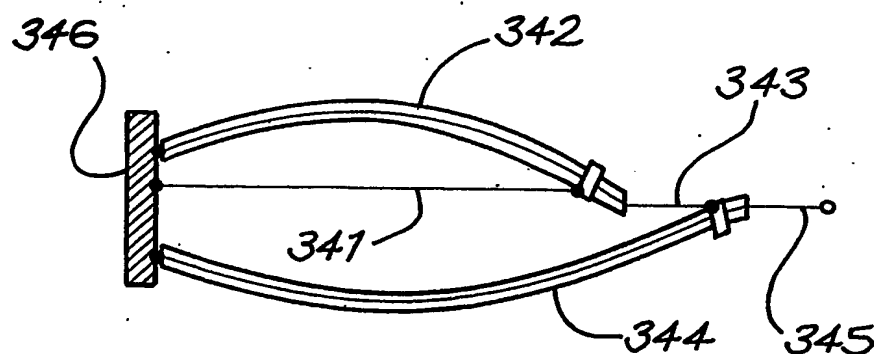


FIG. 34

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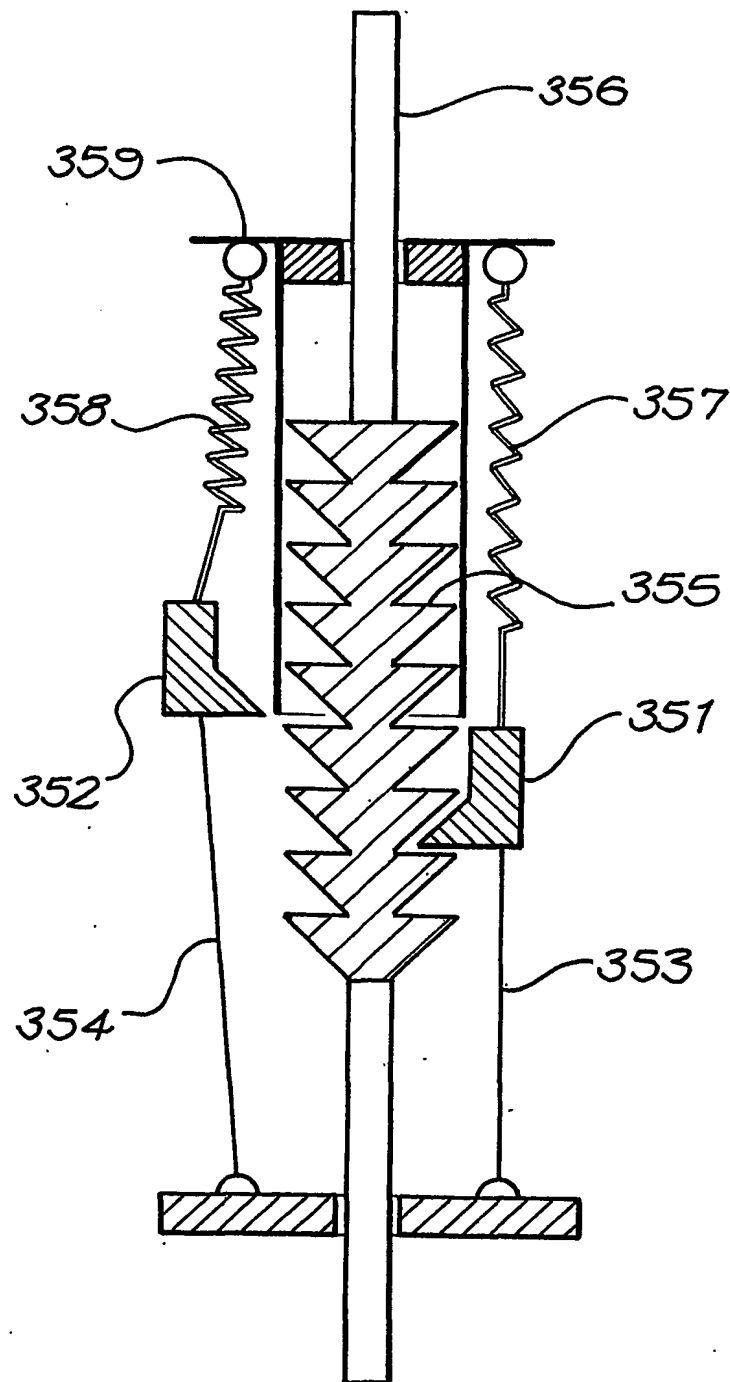


FIG. 35

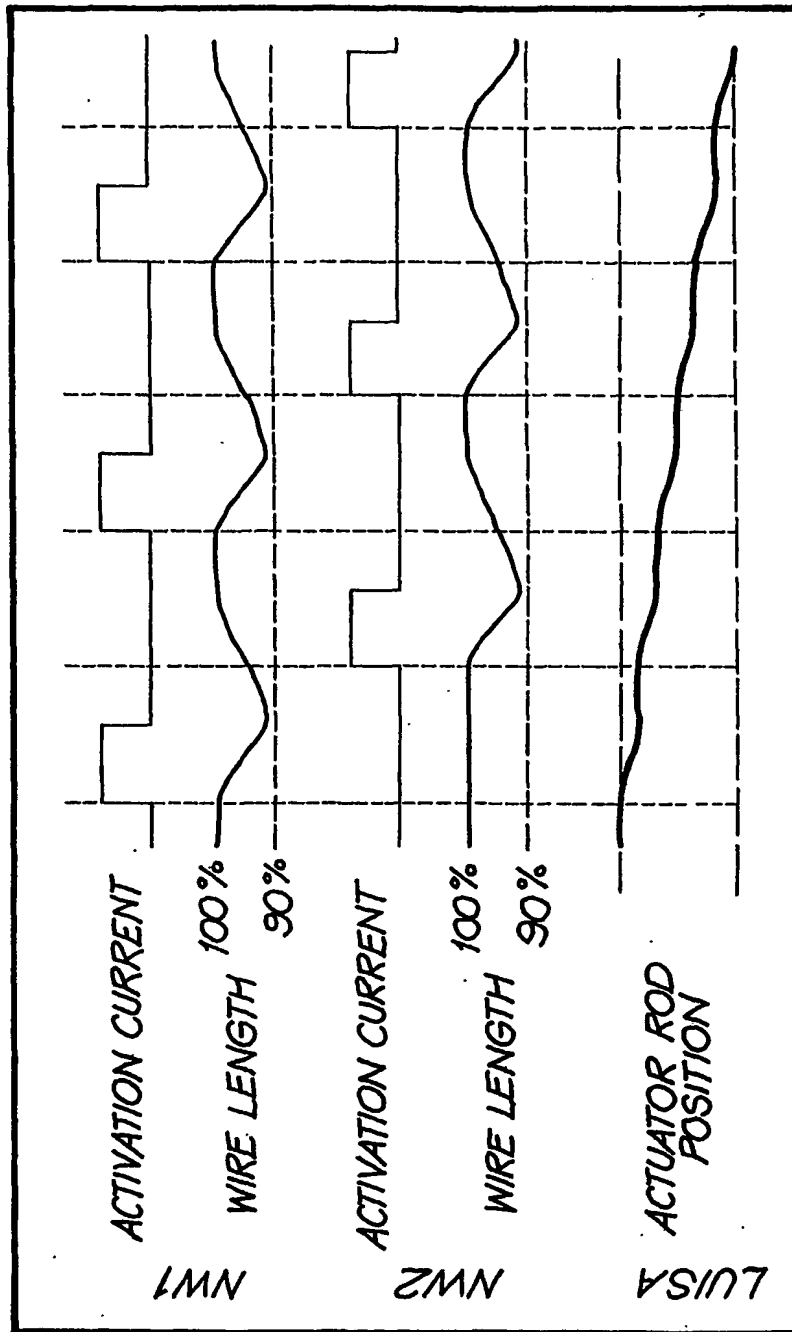


FIG. 36

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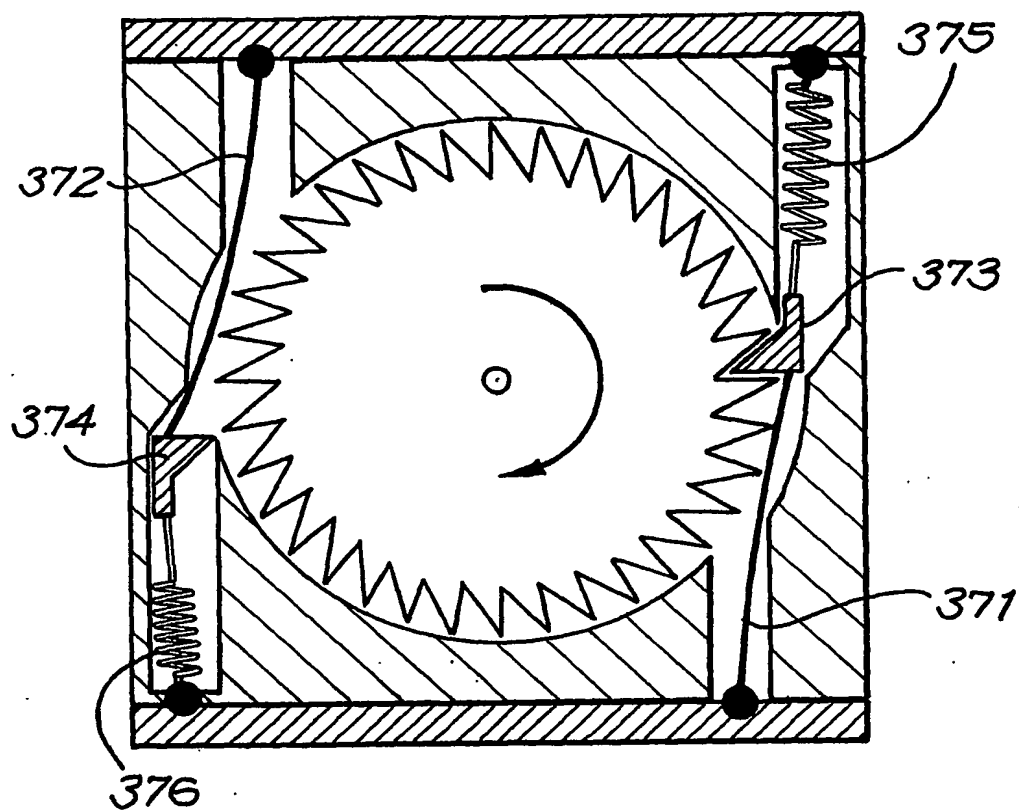


FIG. 37a

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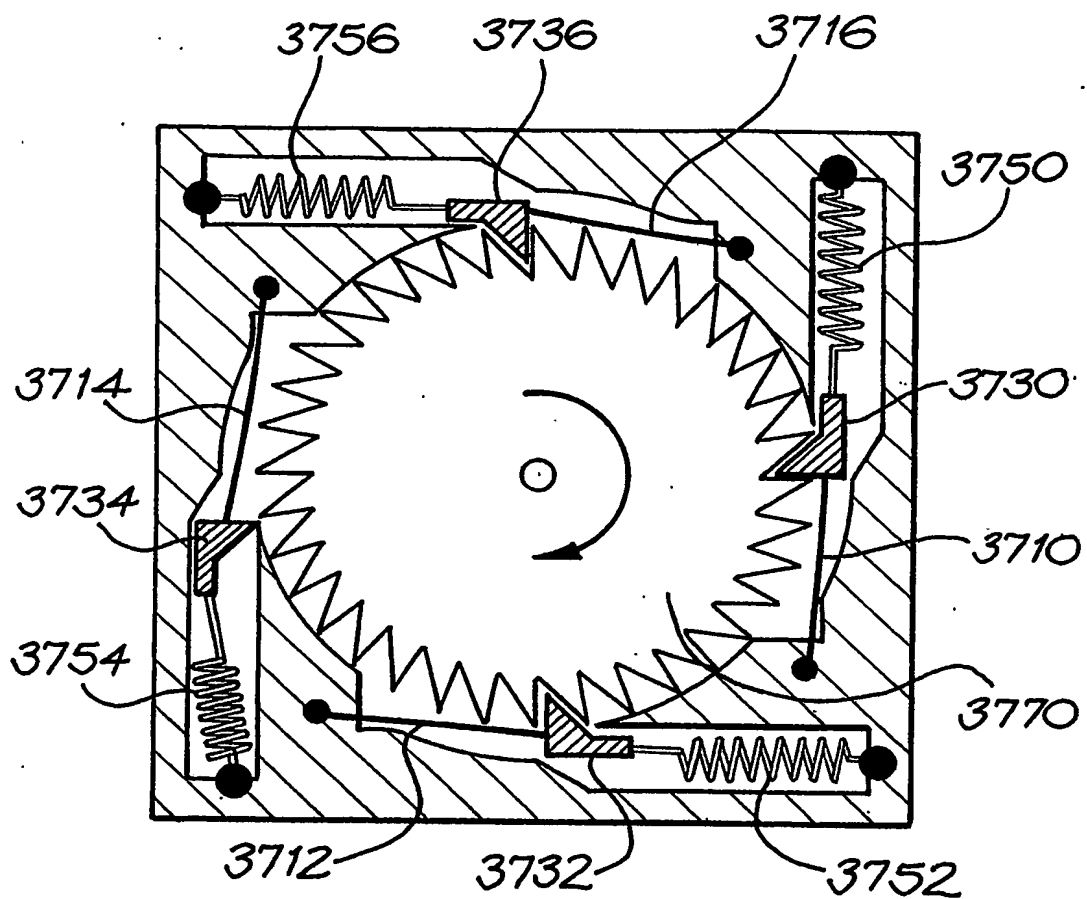


FIG. 37b



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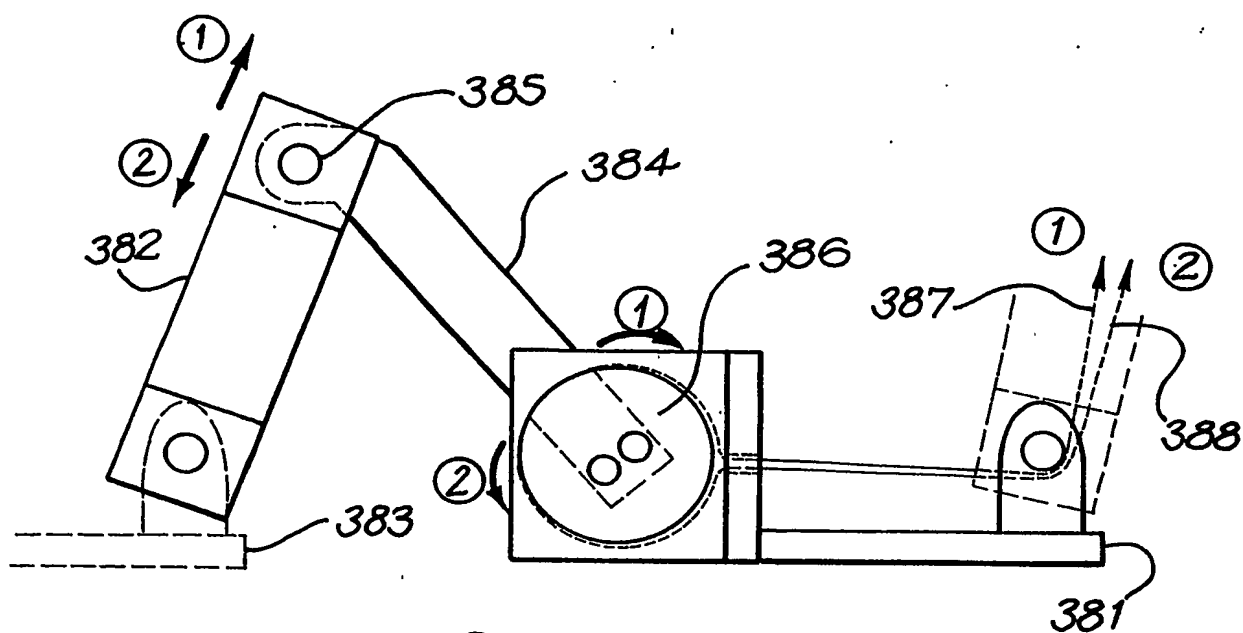


FIG. 38

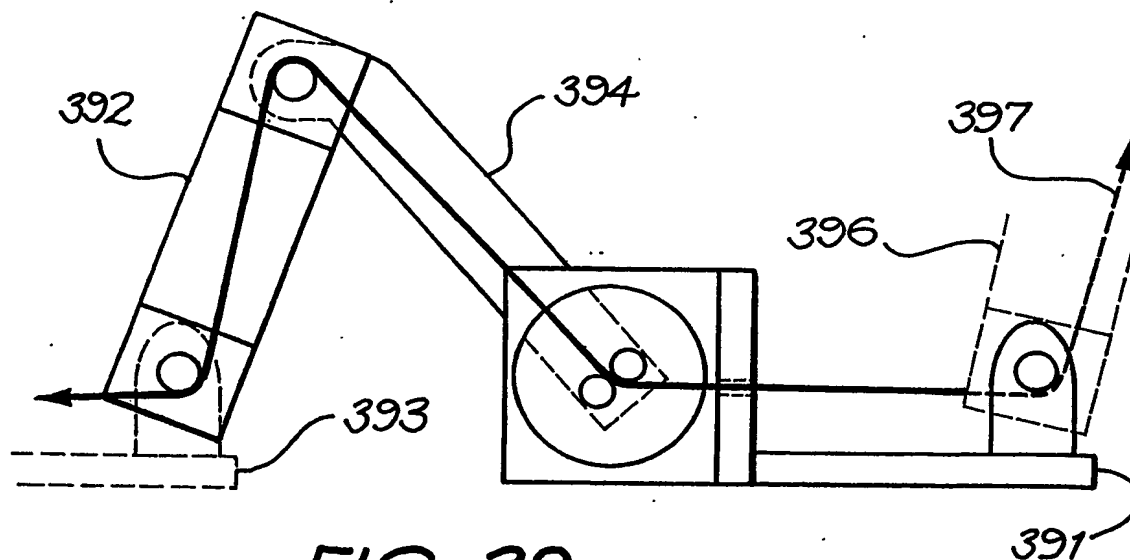


FIG. 39

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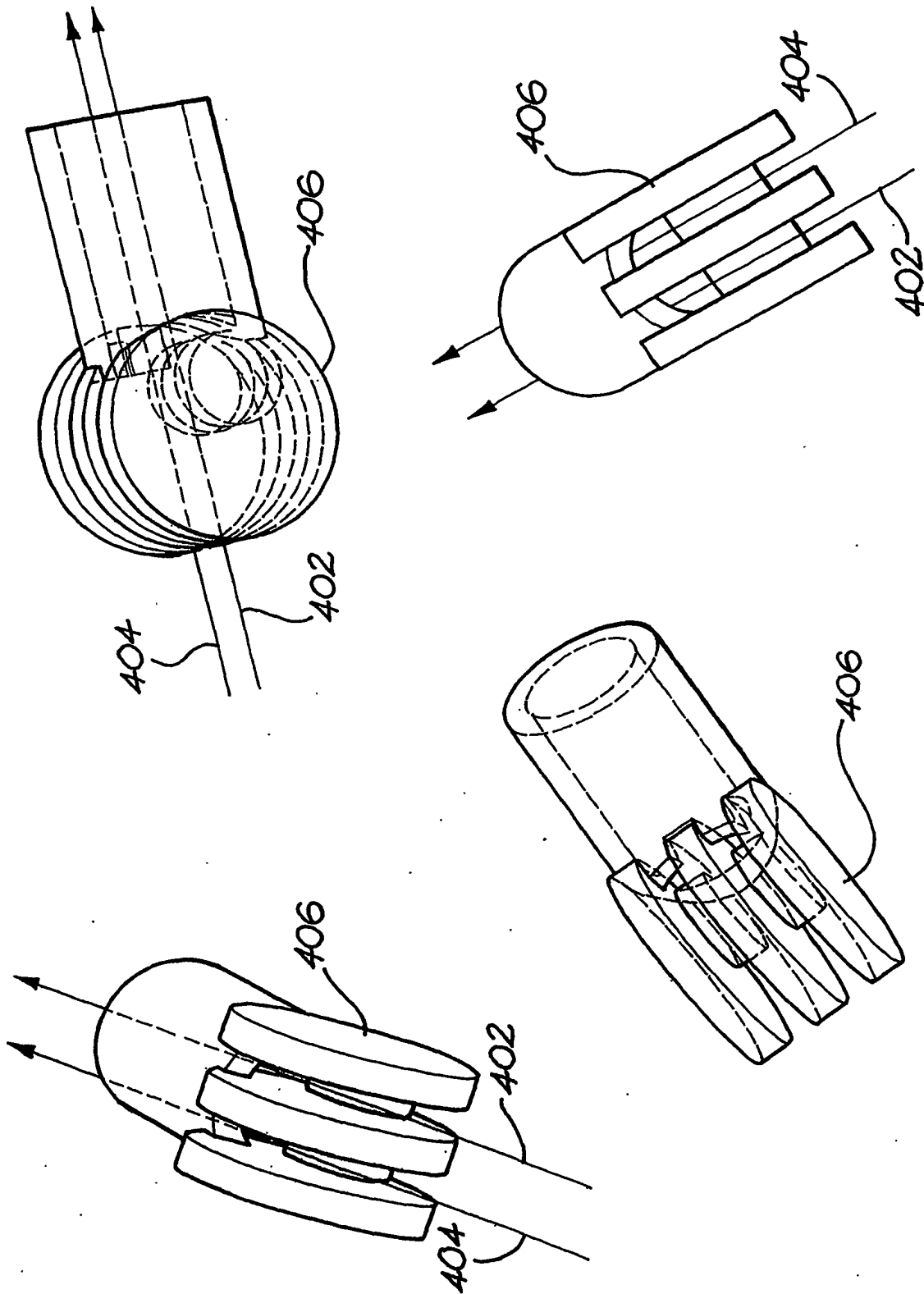


FIG. 40

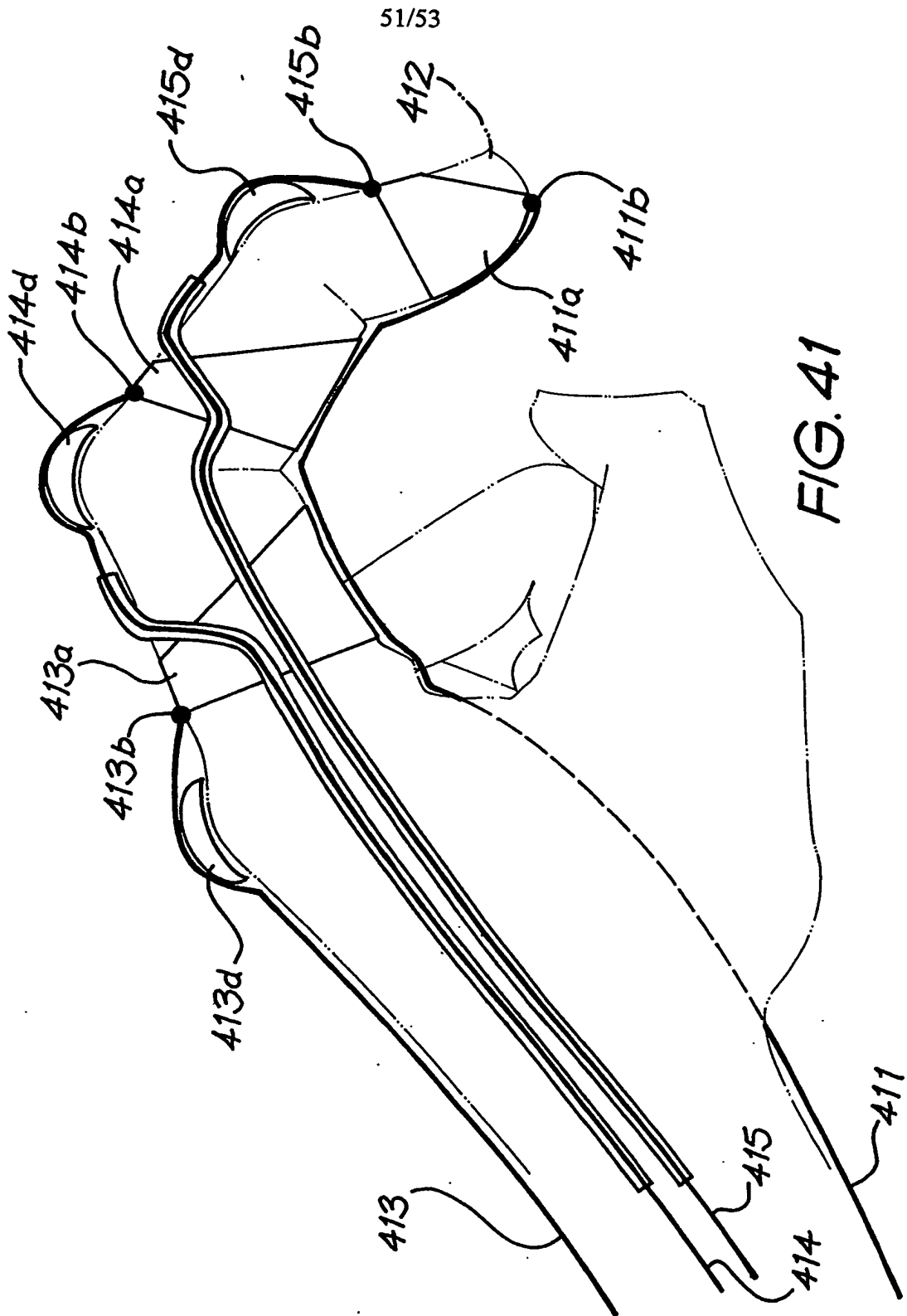


FIG. 41

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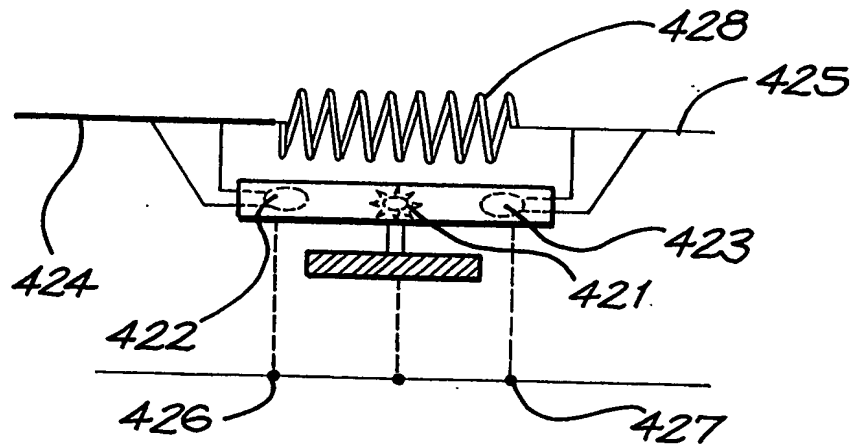


FIG. 42

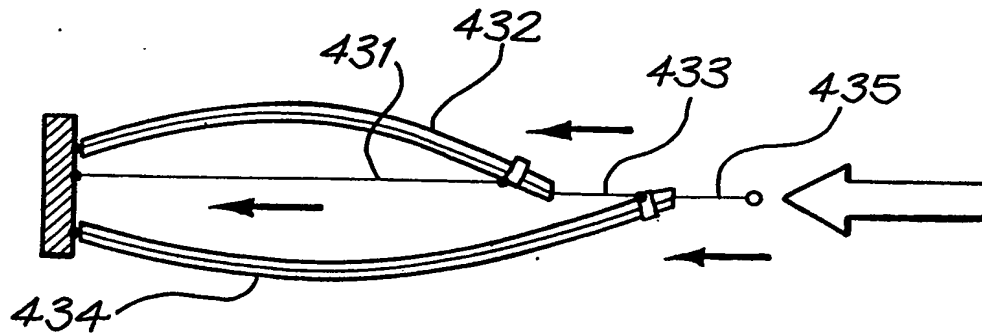


FIG. 43

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